march 1958

office management

the magazine for management executives

in this issue

New posting system simplifies accounting at New York [illegible]

- What are the new trends in insurance, health protection for office workers?
- New York Trust reduces special checking account posting to single operation
- American Colortype proves small office can offer "big office" advantages

A. S. C., TEMPE, ARIZ.

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Out-of-town telephone calls help raise profits, lower costs

One of the real tests of management is the ability to maintain or step up profits during changing times without resorting to false or even harmful economies.

At such times, out-of-town telephone calls may be more valuable than ever. For example:

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—to expedite all phases of administration

Out-of-town telephone calls can produce profitable economies in almost every operation of your business.

Why not check to see if your people are making full, regular use of out-of-town telephone calls to increase profit?

More and more companies are discovering that *it pays.*

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MARCH 1958

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office management

Office Methods, Equipment, Personnel, and Purchasing
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in this issue:

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by Robert Beeman

How one small office made its work measurement program work 60

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"Office of the Year" Awards *(Editorial)* 90

Special checking accounts once represented one of the greatest bookkeeping problems at The New York Trust—until a machine installation reduced a time- and labor-consuming operation to one of the department's simplest operations. Moreover, the bank reports, an operation that once offered wide leeway for human error has now been rendered almost entirely foolproof. See story, page 28.

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Executive compensation rises during 1956-57

Compensation paid to top executives of American and Canadian firms during 1956-57 increased by an average of 5.1 per cent, an American Management Association survey reveals. In 1955-56, a similar survey indicated a 5.9 per cent increase of compensation in the top executive echelon.

This eighth annual study, AMA reports, is the most comprehensive top management survey ever conducted, analyzing the total compensation paid to some 35,000 high-ranking executives in more than 3800 companies of all sizes and types in both countries. The time period covered was essentially the calendar year of 1956, but fiscal years closing as of July 1957 were included.

Economic conditions, the survey discloses, have a strong influence on top executive compensation, but the correlation is only partial. Last period, for example, the companies surveyed increased their sales by an average of 7.8 per cent, showed a five per cent gain in net profits, and paid their management group 5.1 per cent more. During 1955-56, sales increased an average of ten per cent, profits were nearly 25 per cent higher than the previous period, but compensation was increased only 5.9 per cent.

Salary increases were granted to almost 49 per cent of the executive positions for which strictly comparable information was available. The salaries of about 41 per cent of the positions remained unchanged, while lower salaries were paid for about ten per cent of the positions.

Payments were made under some type of bonus, incentive or profit-sharing plan by about 54 per cent of surveyed companies to about 58 per cent of the executives whose compensation was reported. Such payments amounted to about 15 per cent of the total compensation paid to all executives in the survey. The percentage of companies paying bonuses, and the percentage of executives receiving them, increased slightly over the previous year. But the amounts as percentages of salaries were slightly smaller.

More than 70 per cent of respondents reported contributions to some form of retirement plan for 74 per cent of the executives included in the study. These payments amounted to about ten per cent of the salaries of participating executives, or about the same percentage as for the previous period.

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Hand folding is a headache in any office, slow and costly. And it takes girls away from their regular jobs, wastes time that could be spent on more productive work.

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In Short—

Government designates new term for interior designers and decorators

Designation by the government of the term "interior designer and decorator" to replace "interior decorator" has been announced by William D. Hamilton, executive secretary of the American Institute of Decorators. The new designation was made by the U. S. Department of Labor. In his announcement, Mr. Hamilton stated that "confusion has existed regarding the term 'interior decorator'. Related trades such as painting, wallpapering, etc., have correctly called themselves decorators. But the term . . . has also applied to professional interior designers and decorators who are qualified to plan, design and execute interiors and their furnishings, and to supervise the various arts and crafts essential to their completion. The interior designer hires and supervises the craftsmen who carry out the designers' plans and specifications." He concluded that government recognition of the designation interior designer will help the general public to a better understanding of the profession.

Importance of flexibility, furniture design cited by architect

Kenneth H. Ripnen, New York office building and office layout planning architect, stated recently his belief that flexibility is the most important factor to consider when modernizing or building and equipping offices. "Preplanning for flexibility," he said, "to allow for changes and expansion in the office today has become of uppermost importance in the field of office building architecture. . . ." He cited also the importance of office furniture and equipment to the flexible office, stating that desks, partitions, structural and mechanical conditioning of the modern office building should be designed for ease of rearrangement.

Diebold Associates organizes management training institute

Announcement of a new Management Science Training Institute, a division of John Diebold & Associates, Inc., New York management consulting firm, was made recently by John Diebold, president of the firm. "Because of the magnitude of changes involved in applying computers and the new technological tools of automation

(*To page* 12)

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WORKING'S *more pleasant*

Experience proves that the Goodform principle of correct and comfortable seating minimizes fatigue, increases productivity, heightens morale.

GF offers—in one comprehensive package—everything needed to create pleasant, comfortable office surroundings . . . *complete* space and work flow planning . . . a *complete* line of job-selected business furniture . . . *complete* design and decorator services.

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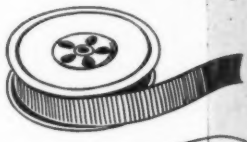

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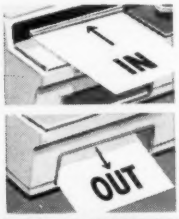

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to business, the problem which we have persistently found the basic obstacle to successful automation is education," he said. The objective of the Institute, he added, is to provide a solution to this critical problem. The Institute has scheduled a series of ten European one-week courses on "Management for Automatic Data Processing," and 17 throughout North America on "Failures in Business Data Processing — and How to Avoid Them." Leaders of the two courses will be Douglas Axsmith, senior consultant of the firm, who will lead the American team, and Vice President Herbert T. Glantz, who will lead the European contingent.

IBM's gross income passes one billion dollar mark

For the first time in the company's history, gross income from sales, services and rentals of its equipment passed $1 billion, International Business Machines Corp. announces. Total gross volume of business recorded for 1957 amounted to $1,000,431,597. This compares with $734,339,780 for the year 1956. Net income for the year ended December 31, 1957, after Federal income taxes, amounted to $89,291,589, the report adds.

Dictaphone receives largest recording machine order in its history

Dictaphone Corporation has received a $1½ million order — largest in the firm's history — from the Civil Aeronautics Administration for 452 Dictatape recording machines and 175 transcribers. The equipment will be used in air traffic control towers at commercial airfields throughout the country. Dictatape recorders will maintain round-the-clock records of conversations between planes in flight and airfield control towers. A new voice-time signal feature will enable the CAA to pinpoint reporting times of each aircraft and to have precise information available for later reference.

1957 Business Show sets new attendance, exhibit records

Attendance at the 1957 edition of the National Business Show, held late last year at the New York Coliseum, totaled 155,191 persons, Show officials have reported. This figure sets a new attendance record for the annual exhibit of business machines and systems. Included at the Show were 385 exhibits, displaying 500 different product classifications — another new rec-

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Gentlemen: I have 2,500 or more cards and—

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it's always ready to write!

If you've ever reached for a desk pen—only to find it empty or the point clogged with thickened ink—the Esterbrook 444 is the answer to your problem.

It's the only desk set that keeps up to a *6 month* supply of ink protected against evaporation from air circulation.

And . . . at the slightest touch of the point, the exclusive magic-meter in the Feed-matic* base instantly feeds the pen enough ink to write 500 words.

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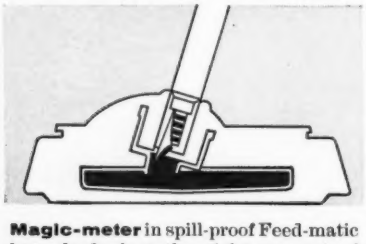
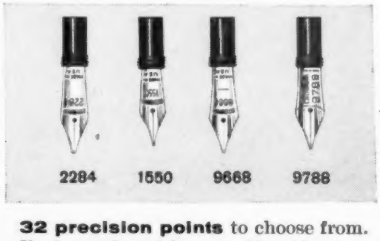


Magic-meter in spill-proof Feed-matic base feeds just the right amount of ink to pen *instantly* at a touch of the point. Never clogs. Fingers stay clean.



32 precision points to choose from. Each numbered for sure identification. Damaged points are replaced immediately for only 60¢.

Esterbrook® 444 Desk Set with Feed-matic Base.

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ord. Officials add that renewal contracts for the 1958 Show are being received at a "rapid rate."

Standard Register sets up Systems and Procedures Division

Formation of a new Systems and Procedures Division for The Standard Register Co., business forms company of Dayton, Ohio, has been announced. Major functions of the division, to be headed by Ben S. Graham, will be development of systems and procedures, data processing and control reports for management.

NOMA enrolls 169th chapter in Sioux City, Iowa

A charter was presented recently to a group of Sioux City, Iowa business executives who formed the 169th chapter of the National Office Management Association. NOMA, founded in 1919 with 27 members, now lists more than 18,000 members in chapters located throughout the United States, Canada, Mexico and Hawaii. Glenn Young, Sioux City management executive, was elected president of the new chapter.

Twenty new offices opened by Manpower, Inc.

Four foreign and 16 domestic offices were opened by Manpower, Inc., in recent months, bringing to 138 the total number of offices maintained by the firm. New foreign offices were opened in Santurce, Puerto Rico; Brussels and Liege, Belgium, and Copenhagen, Denmark. Richard Krauthoefer will assume supervision of the firm's overseas operations, in addition to his regular duties as franchise manager.

Shredmaster announces move to new quarters

The Shredmaster Corp., formerly located at 9 East 40th St., New York City, has moved to new quarters at The Holland Plaza Building, 75 Varick St., New York 13. Telephone number of the firm is CAnal 6-6800.

AMA schedules electronics conference this month

The Fourth Annual Electronics Conference, to run concurrent with the American Management Association's Annual Exhibit of Electronic Data Processing Equipment, will be held from March 3 through 5 at the Statler Hotel in New York. This year's conference will include two closed-circuit telecasts of computer applications actually in use, in addition to speeches by

(*To page* 18)

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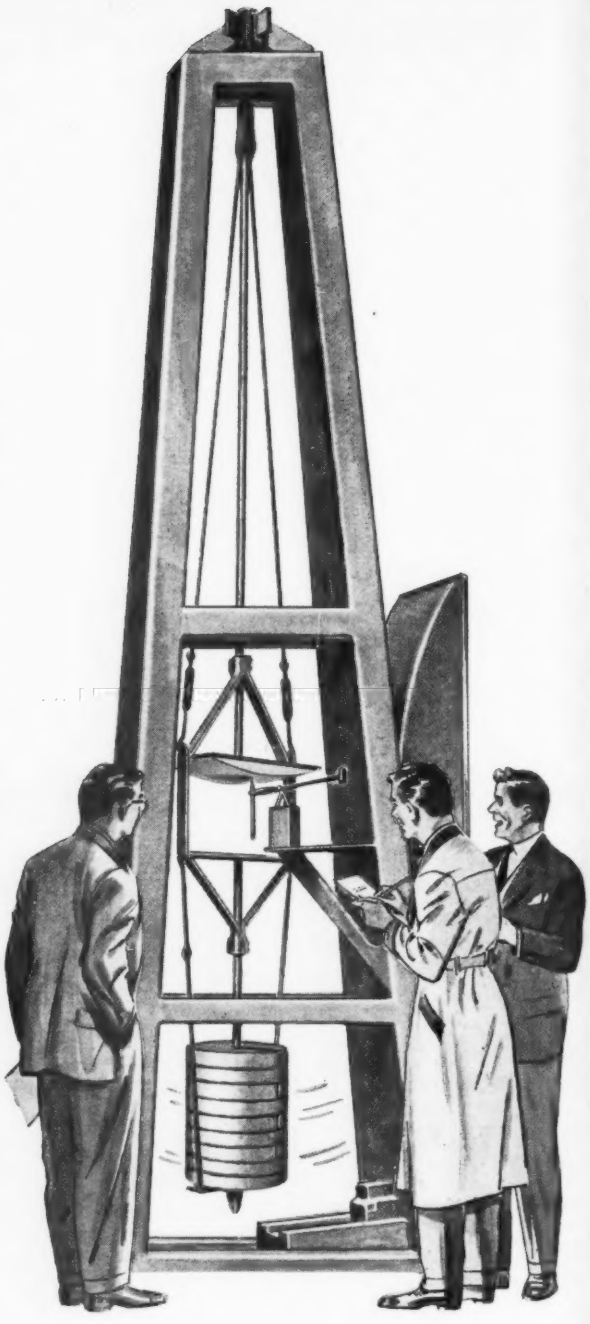

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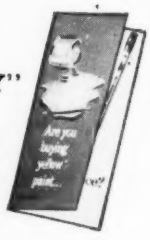

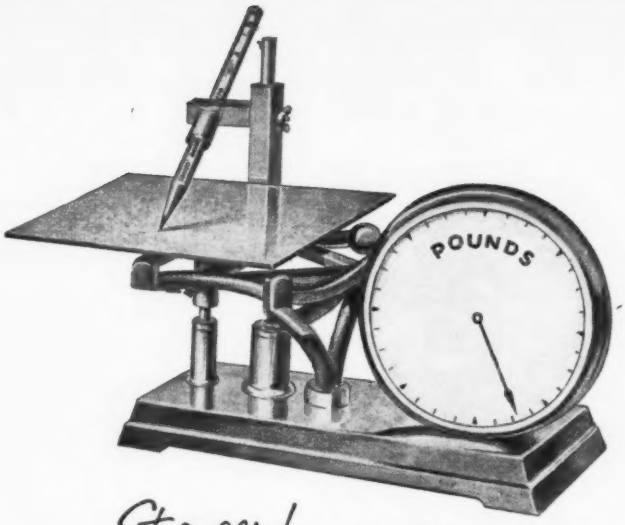

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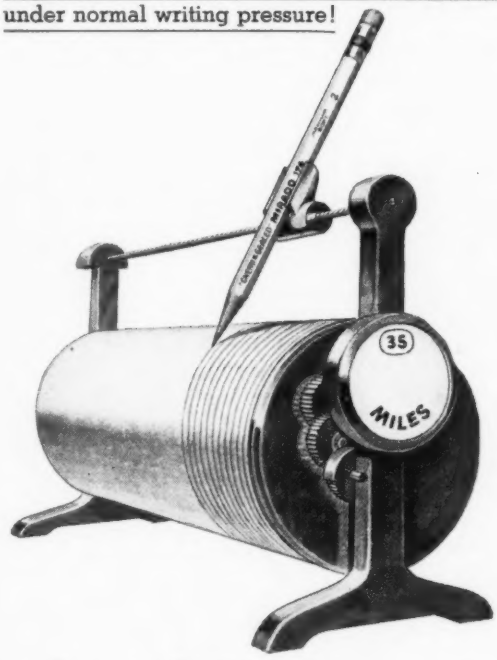

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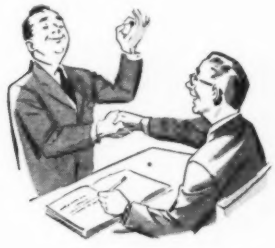

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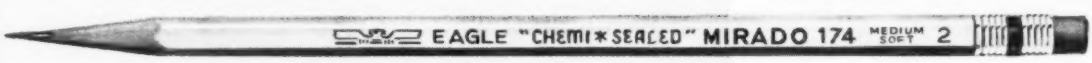

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authorities in the field of electronics. An exhibit of electronic data processing equipment will be a highlight of the afternoon session on March 4. Attendance is open to both members and non-members of the association. Complete details may be obtained from AMA, 1515 Broadway, Times Square, New York 36.

Business forms industry notes successful year; institute elects officers.

Sales of the business forms industry in 1957 are expected, when fully tabulated, to total at least the dollar volume of 1956, which reached $308,000,000, for a gain of $32 million over 1955, the Business Forms Institute has reported. Predictions that 1958 will equal 1957 were made, with increased operating costs matched by greater productivity for each man hour and more efficient plant management. William C. Lamprechter, vice president and general manager of Stephen Greene Co., Philadelphia, was installed as the Institute's new president. He succeeds R. S. Daugherty. Other new officers include T. S. Duncanson, president of Moore Business Forms, Inc., Niagara Falls, N. Y., and Moore Corp., Ltd., Toronto, first vice president; Thomas A. Taylor, vice president of Schwabacher-Frey Co., San Francisco, re-elected second vice president; and H. M. Meloney, Greenwich, Conn., executive director.

People in the News

Don W. Dornon has been elected vice president, and *Joseph McKeen* treasurer of Dun & Bradstreet, Inc., New York.

Richard M. Paget, partner of the management consulting firm of Cresap, McCormick and Paget, New York, Chicago and San Francisco, has been elected president of the Association of Consulting Management Engineers.

N. H. Schlegel has been appointed to the newly-created post of vice president in charge of marketing at Cory Corp., Chicago.

J. William Stuart has been elected to the executive committee of Chas. Pfizer & Co., Inc., Brooklyn, N. Y.

A. T. Robbins has rejoined the Filmsort Co., Pearl River, New York division of Miehle-Goss-Dexter, Inc., as manager of market research.

J. Robert Stevenson, Jr. has been promoted to the newly-created position of methods analyst at The Pfaudler Co., Rochester, N. Y.

Thomas Allinson has been appointed president and chief operating executive of Weston Instruments Division of Daystrom, Inc., Murray Hill, N. J., and allied companies.

Paul F. Fuersich has been appointed plant controller at Mosler Safe Co.'s Hamilton, Ohio, plant.

Louis P. Bullat, treasurer of the International Tag & Salesbook Co., Chicago, has been elected president of the company.

John R. Crowley, manager of systems and procedures, Hot Point Co., Chicago, has been elected president of the Office Management Association of Chicago.

John W. Haanstra has been named assistant manager of product development in charge of development programs at the Data Processing Division of International Business Machines Corp., White Plains, N. Y.

Books and Pamphlets

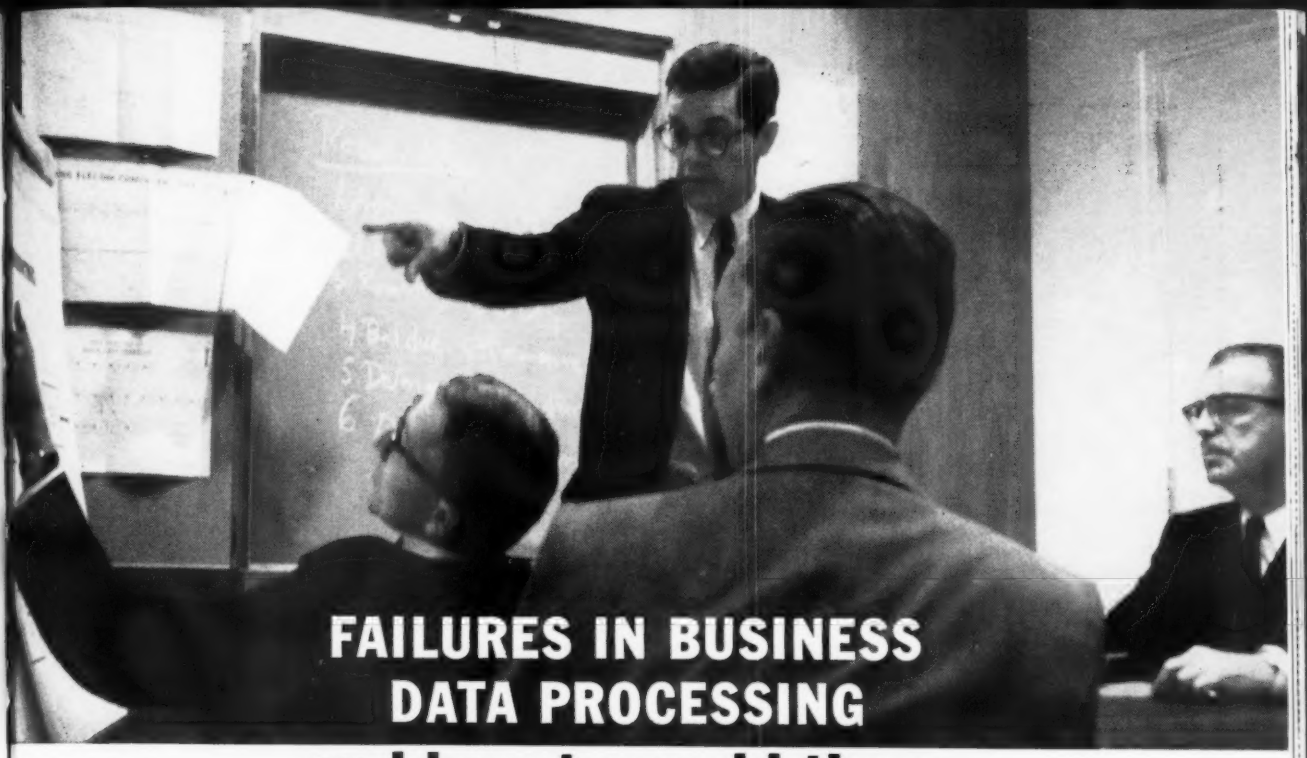
AUTOMATION IN BUSINESS COMMUNICATION, by Robert E. Moore, 146 pages. Vision, Inc., 60 W. 55th St., New York 19. $3.95.

This book covers the need for effective communication between individuals and departments, and contains a seven-step formula for writing reports and an eight-step formula for writing memoranda. Its primary function is to indicate how readers may prepare such material. Organizing, illustrating and writing these communications are discussed in detail. Pertinent illustrations are provided. *Inquiries should be directed to George A. Blessing, National Foremen's Institute (a division of Vision, Inc., 100 Garfield Ave., New London, Conn.*

MOTION AND TIME STUDY (4TH EDITION), by Ralph M. Barnes. 665 pages. John Wiley & Sons. Inc., 440 Fourth Ave., New York 16. $9.25.

In this new revised edition, Dr. Barnes presents basic principles which underlie successful application of motion and time study supplemented with illustrations and a variety of practical examples. Included is new

(*To page 21*)



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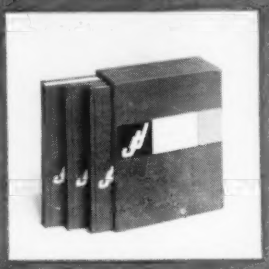

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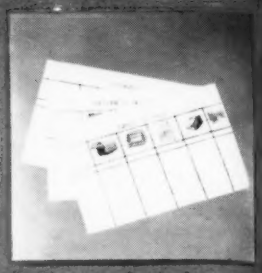

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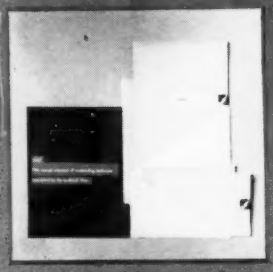

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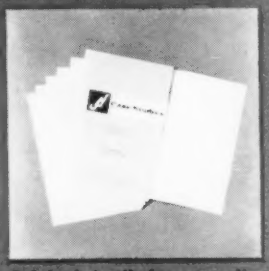

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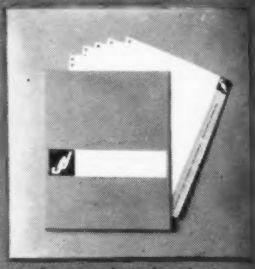

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material on developments in industrial use of pulse rate as an index of physical activity. The section devoted to time study is expanded by new material on statistical procedures in time study and information on auditing of methods time standards and wage incentive plans. Other areas cover micromotion study, fatigue, work sampling, motion and time study training programs, and operator training. Dr. Barnes is professor of Engineering and Production Management at the University of California, Los Angeles.

OFFICE MANAGEMENT AND CONTROL, by George R. Terry. 769 pages. Richard D. Irwin, Inc., Homewood, Ill. $8.35 (trade price).

Designed for executives and office managers, this new book presents detailed information on electronic office machines, automation in the office, forms, methods, paperwork simplification, training, wage administration, and a number of other topics. Emphasis is placed on the four major functions of the management process — planning, organizing, actuating and controlling. Specific points covered include the role of office management, records retention, duplicating, planning office work and procedures, planning for office equipment, planning of office space — location and facilities, office physical working conditions and layout, principles of office organizing, motivating office personnel, job evaluation and salary administration, developing office executives, simplifying office methods, and office costs and budgets. The author is a member of the School of Business, Northwestern University, and a management consultant.

MANAGEMENT IN A RAPIDLY CHANGING ECONOMY, edited by Dan H. Fenn, Jr. 360 pages. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36. $5.00.

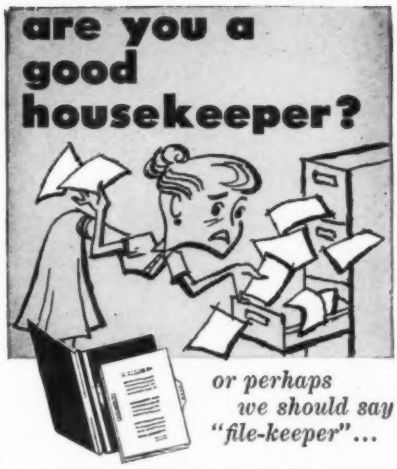
Edited by an assistant editor of the *Harvard Business Review* and member of the faculty of the Harvard University Graduate School of Business Administration, this new book is a compilation of speeches and discussions which highlighted the Harvard Business School's recent 27th National Business Conference. In 15 chapters are presented the assessments of leading management representatives on technological, social, marketing and economic changes already under way, and which will have a far-reaching influence on business management. Among problems considered are future sources of capital, the growth chances of small business, labor attitudes, new materials, and personal career planning in an era of change. Among organizations represented are Ford, J. Walter Thompson, Bankers Trust, General Dynamics, General Electric, and many other firms—both large and small—in addition to five important business training centers.

OFFICE MANAGEMENT, by Charles B. Hicks and Irene Place. 548 pages. Allyn and Bacon, Inc., College Division, 70 Fifth Ave., New York 11. $8.65.

Divided into six parts, this book analyzes management's role in the office, and the control and simplification of office work procedures. Office planning, organizational principles for the office manager, the office manager's organizational relationships, office controls, work measurement standards, the work simplification program, forms simplification and control, office layout, office communication service, records organization and management, duplicating service and computing machines and automation are some of the functions and operations described. One complete part is devoted to the "human element in the office," which includes chapters on office job analysis, induction and employee development, and office supervision. A glossary of office management terms is a feature of the book.

MANAGEMENT - EMPLOYEE COMMUNICATION IN ACTION, by Harold P. Zelko and Harold J. O'Brien. 177 pages. Howard Allen, Inc., P. O. Box 1810, University Center Station, Cleveland 8.

A synthesis of the authors' wide experiences as training directors for industry and Federal agencies, as training consultants, and as specialists in their professional field of Speech, this book applies the principles of effective speaking to speech skills. It is divided into two parts. Part One — "The Communication Program" — discusses the place of communication in modern management, various communication processes and the communication "action program." Part two — "Communication Skills" — offers guides in effective oral communication.



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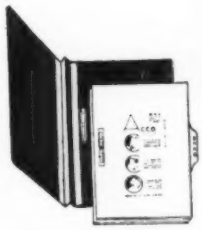

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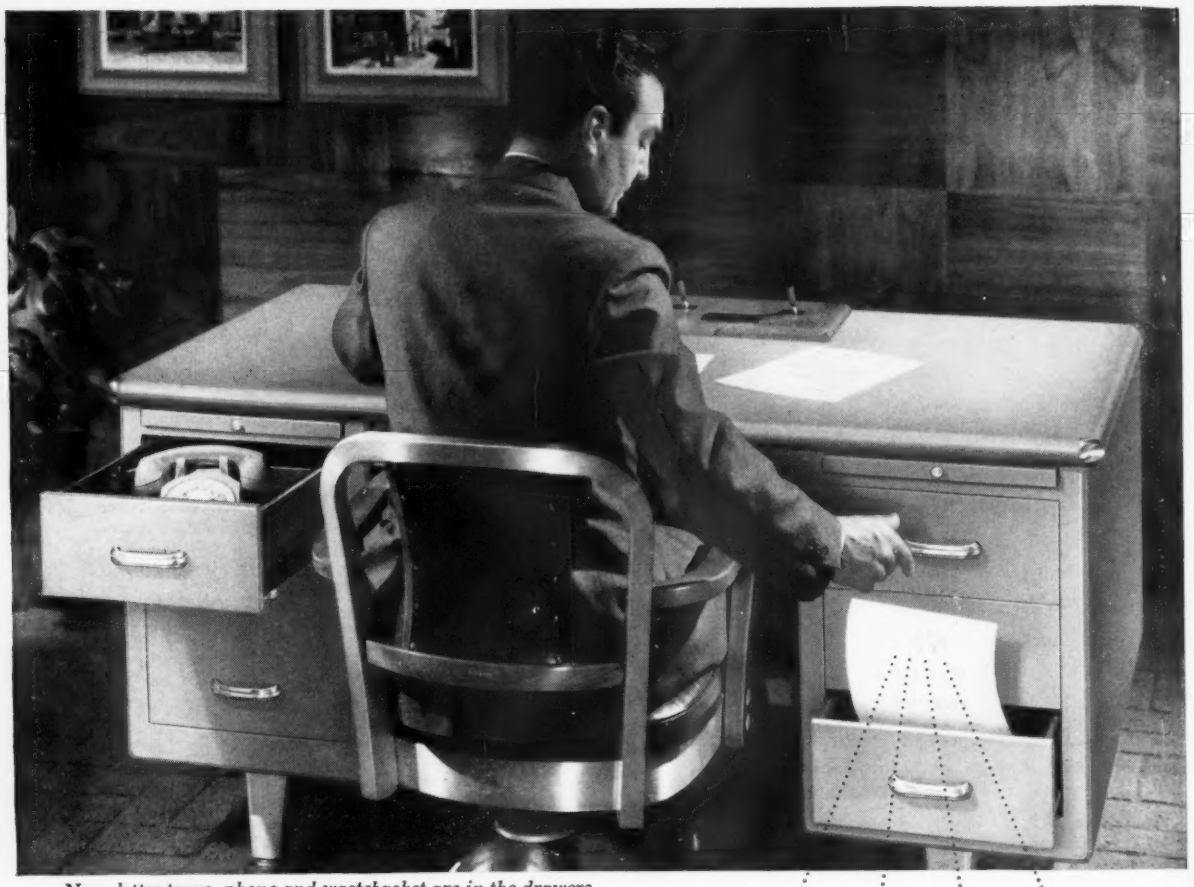

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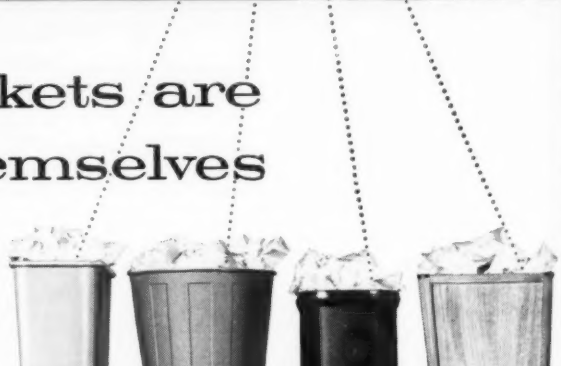

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Coming Events

4th Annual AMA Electronics Conference and Exhibit. New York, March 3-5.

Sponsor: American Management Association. *Place*: Statler Hotel.

AMA Special Conference on Employee Benefits. Chicago, March 5-7.

Sponsor: American Management Association. *Place*: Drake Hotel.

APGA Annual Convention. St. Louis, Mo., March 31-April 3.

Sponsor: American Personnel & Guidance Association. *Place*: Sheraton-Jefferson Hotel.

13th National Industrial Health Conference. Atlantic City, N. J., April 19-25.

Sponsor: Various national medical and health organizations. *Place*: Convention Hall.

7th Annual NMA Convention. New Orleans, La., April 21-23.

Sponsor: National Microfilm Association. *Place*: Hotel Monteleone.

AMA Spring Insurance Conference. New York, May 5-7.

Sponsor: American Management Association. *Place*: Hotel Statler.

AMA General Management Conference. New York, May 12-14.

Sponsor: American Management Association. *Place*: Hotel Commodore.

ASPA Tenth Annual Conference. Philadelphia, May 19-21.

Sponsor: American Society for Personnel Administration. *Place*: Benjamin Franklin Hotel.

NOMA Office Machinery & Equipment Conference & Exhibition. Chicago, May 25-28 (Conference); May 26-29 (Exhibition).

Sponsor: National Office Management Association. *Place*: Conrad Hilton Hotel.

NACA 38th Annual Cost Conference. Chicago, June 23-26.

Sponsor: National Association of Cost Accountants. *Place*: Conrad Hilton Hotel.

NSA International Convention. Minneapolis, Minn., July 16-19.

Sponsor: National Secretaries Association (International).

with the EDITORS

THE competition between cities to see just how vari-colored their business areas can become has taken a new turn with the arrival in mid-Manhattan of what is billed as the first gold-colored office building ever constructed. We have seen green tinted glass, silvery aluminum, bronze, and stainless steel used for office buildings, but gold strikes a new note. Not, we hasten to add, a note as wildly extravagant as it sounds; the accent is on "gold-colored," rather than "gold," and the actual material used in the curtain walls of the new structure is color anodized aluminum.

NEVERTHELESS, the total effect is the same—a gold building, which in company with its neighbors, is speeding the transformation of midtown New York from sober grey and brown stone to a riot of metallic color. The city used to be famous for its Gay White Way, but it begins to look as though its future keynote, if this keeps up, will be its jeweler's finish business district. All hands had better shield their eyes on bright days this summer.

THIS new iridescence in which the business world is cloaking itself might well bring about the reversal of a trend which has many confirmed city merchants badly worried—the loss of business to shopping centers in the suburbs. An old line downtown store has its problems cut out for it in competing with the glamorized shopping centers of the suburbs, which can boast everything from day nurseries for the younger generation to a wash and polish job on the family car while the lady of the house shops. But, where once the glamor of the city shops drew in the outlying residents, today it may be the Arabian Nights magnificence of the city office buildings that lures them back. After all, what can even the newest shopping center offer to compare with towers of bronze and gold, spires of glass tinted all the colors of the rainbow?

THOSE final authorities of suburban life, the children, will see to it that a goodly amount of sightseeing time is spent in the city once they have discovered this visual feast. And once the children begin to insist on the city . . . well, urban retailers should take heart.

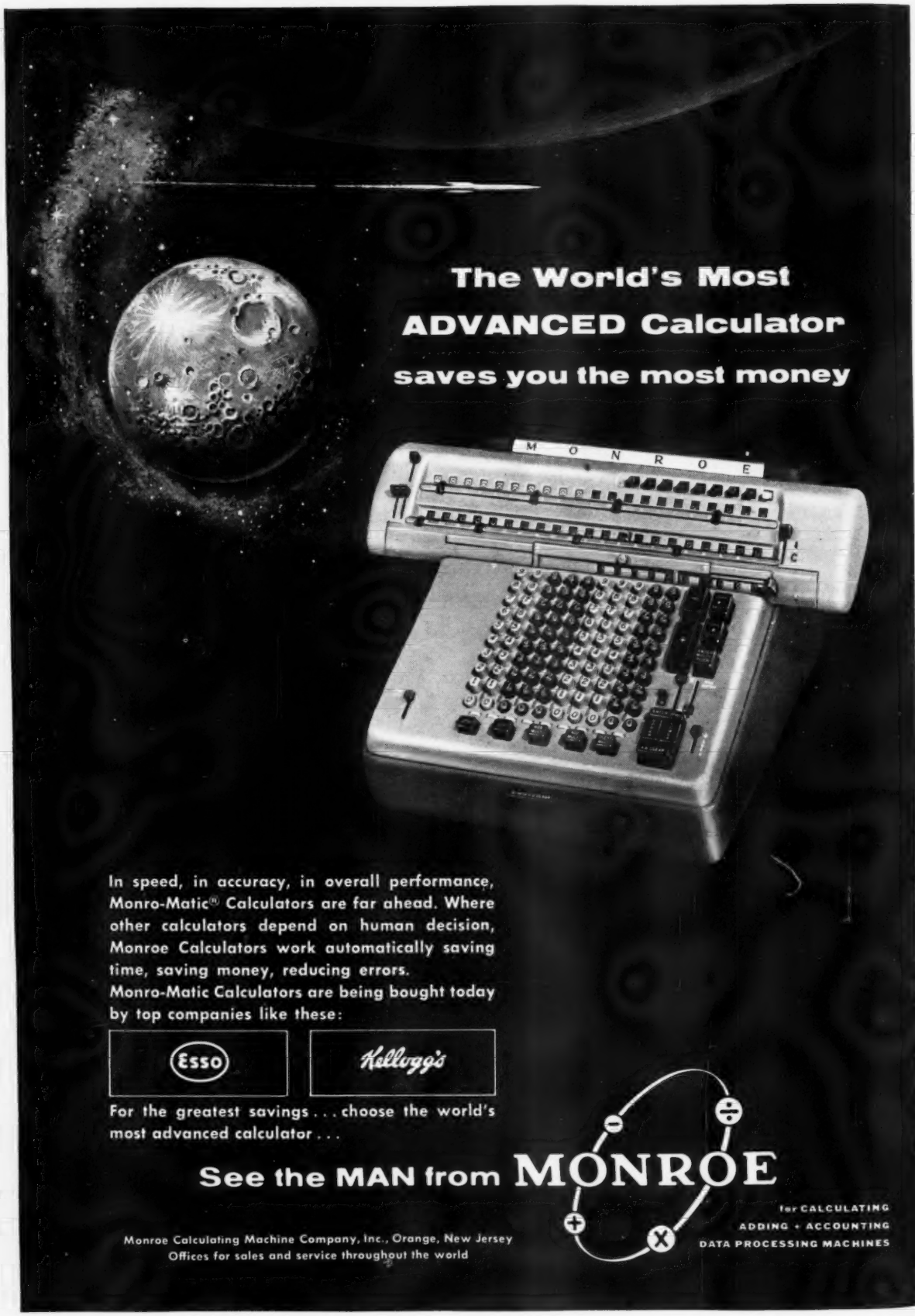
IT'S a strange reversal of values, in a way. Where once, offices were housed in buildings as conservative and predictable as their auditors' reports, while apartments, shops, and theatres did the architectural experimenting, today even the newest hotels are apt to look stereotyped when compared with their business neighbors in the city. Department stores and theatres aren't even in the running.

ALL of which may help to explain some of the woes of those who sell goods and services in the city. A city should be a magnet for its surrounding area, not a workplace to escape from every evening. If the same verve and imagination shown in planning office buildings were to be devoted to the entertainment, the recreational, and the shopping facilities of the central city, it could mean a renaissance of the traditional role of the city as the heart of its area.

WE'RE busy at the moment finishing off the last few chores involved in producing our 1958 Yearbook issue, which will be coming to you later this month. This year's edition, beside covering the major fields of concern to office administration, as did the 1956 and 1957 versions, will also contain new reference sections not incorporated in the previous Yearbooks. This is in line with our goal of making the Yearbook a manual for daily use, as well as an overall review of the significant trends in the wide range of interests embraced in the modern office. We hope that you will find the 1958 Yearbook edition even more useful than you have the previous editions. We believe that you will.

Robert M Smith

Editor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What are the new trends in insurance, health protection, for office workers?

Group protection against medical disaster strongest new trend in employee insurance benefits; smaller companies aided as minimum number for "group" is reduced—

by Robert M. Smith

EVEN THOUGH business began to slow perceptibly in the last quarter of 1957, and is now at a point where even the most determined optimists are conceding a recession, the effect of the slowdown has had no marked impact yet on the office, or on those who work in the office. The mounting unemployment figures are almost entirely on the manufacturing lines; although there have been some layoffs of white collar workers in the hard-hit automobile industry, this case is the exception rather than the rule.

As a matter of fact, pressure for office workers and continuing pay rises for office workers were still strong through 1957. The annual salary survey conducted by the National Office Management Association revealed that average clerical salaries across the country increased by more than four dollars a week during 1957. Since the increase in 1956 over 1955 had been only three dollars, salaries not only advanced absolutely; the rate of increase also grew.

This is a trend that will undoubtedly slow down this year, unless there is an upsurge in business earlier than is anticipated. But in another large area of "indirect" wages, the fringe benefits which are becoming so large a part of the employee package, the trend is still definitely upwards.

These benefits, in most offices, take the form of medical insurance, group life insurance and in a great many, some form of pension plan. A growing trend across the country, even in relatively small companies, is to include medical catastrophe insurance in the package.

Statistically, some form of health insurance was held by 123,000,000 people at the end of 1957, the great majority of whom were covered under employee group plans. The trend was accelerated by the rapid development of "baby group" plans—plans through which employee groups of less than twenty-five people could be covered.

Major development of the last few years has been the very wide extension of catastrophe medical insurance—policies which cover the expenses of workers or their dependents who are hospitalized over a long period of time, during which their regular coverage under the familiar Blue Cross-Blue Shield type of hospital and surgical benefits would be exhausted. Such plans, which again are usually offered by companies to their employees, rose by 1188 per cent during the six-year period ending in 1957.

Some sort of pension provision, insurance against financial drain of illness, are vital in new "employee packages"

Another major new development in the field is the growth of health protection plans written as group policies which can be maintained after retirement of the employee. This is newer than the major medical policies which are becoming so widespread, but it is a trend that is growing fast. According to the most recent New York State surveys, more than one-third of all employees in the state were covered by group medical plans that could be continued after retirement. Moreover, several companies are experimenting with the writing of group insurance plans under which employees, after retirement, benefit from company-paid health insurance — protection without any cost to them. Eastman Kodak is perhaps the prime example. Under the Eastman plan any employee who has been with the company for fifteen years, and who has had health insurance under the company plan for five of those years, is entitled on retirement to insurance protection equal to that held during his active working life for his retirement years without cost to him. Benefits are payable under the three types of insurance open to him as an employee: basic hospital, basic surgical, and major medical or catastrophic illness insurance.

The Kodak plan is unusual in that it provides for such coverage without charge to the retired employee; a more usual provision is for the retired worker to pay at least a portion of the continuing cost of the health protection. Even though he may be required under his individual company's plan to pay all costs he still benefits from the lower group rates, and has individual health protection, both for himself and his dependents, which might be quite prohibitive in cost if he were to take it out on an individual basis at retirement age.

The most spectacular growth of all in insurance protection, however, has been in the field of medical catastrophe insurance. Although catastrophe plans are offered by Blue Cross-Blue Shield in some areas, the great majority of these plans are provided by insurance companies. More than 9,000,000 people are now covered by the catastrophe policies which may vary in total benefits, but which have certain main features in common. They almost always include a deductible—a "corridor" between the basic hospital-surgical benefits—and the figure at which the major illness policy will begin covering medical expenses, and they usually have a coinsurance feature. The insured must assume a certain percentage of the major expenses, with policy coverage for the rest.

Many companies in field

Thus, a standard major medical policy might provide that 75 per cent of all medical expenses over $100 incurred after basic hospital-surgical benefits had been exhausted would be covered, with the insured paying 25 per cent of the continuing costs. Such policies may be written in various amounts, and they usually carry a maximum benefit limitation.

This newest major health coverage is rapidly becoming a standard feature in many offices, either as a group benefit carried entirely by the employer, or as a plan under which employer and employee share premium costs. Dependent coverage is also offered under most plans, with the employee paying for such coverage, but benefitting by low group rates.

The writing of such major medical insurance plans has put old line insurance companies into sharp competition with Blue Cross-Blue Shield in the provision of basic medical-surgical plans, since many companies offer "comprehensive" policies—plans covering both basic hospital surgical-medical benefits, and major medical insurance. Thus, although Blue Cross-Blue Shield still leads in basic hospital coverage for employee groups, insurance companies already write more group contracts for surgical expenses than does Blue Shield, and hospital coverage under insurance plans is on the increase, at the expense of Blue Cross contracts.

Another employee health protection benefit which is developing rapidly is group insurance against loss of income

Most of the health insurance plans now being written make it possible

through prolonged illness. More than 18,000,000 employees are now covered by such insurance contracts, which again may be written on a basis of joint employer-employee payment of premiums or may be assumed altogether by employers. The usual payment scale under insurance plans is 40-60 per cent of the employee's salary, and the usual period for payment of benefits is 26 weeks. Although such insurance plans are always voluntary, in four states, California, New Jersey New York, and Rhode Island, employers must meet state laws requiring loss of income protection from non-occupational accident and sickness. The employer, in all four except Rhode Island, may do this by participation in an insurance plan which meets the state's minimum benefit standards, and thus include loss-of-income protection in the overall accident and health protection offered his employees.

One of the major reasons, certainly, for the spread of these basic forms of insurance is the growing willingness of insuring companies to offer benefits to very small groups. Group policies for as few as twenty-five employees are fairly common today, and the number of policies being written for groups as small as 10 is increasing rapidly. Certain insurance companies will offer group plans for two or three employees.

There are pros and cons on each side on the question of whether the employer should pay all costs, should share them with the employee, or should require the employee to pay all costs, if he is interested in participating. If the employer pays all costs, or a substantial portion, it may all be deducted from income tax; and all employees are protected. Contributory plans, on the other hand, often offer employees larger benefits, since their contributions plus the employer's total more than most employers are able to pay alone. Joint participation usually insures better employee understanding of the plan and its provisions, unless the company concerned has an unusually efficient communications program. Moreover, in times of recession, it represents less of a load on the employer. In practice, most companies have some form of contributory plan, at least for portions of the health package. Thus, a company may offer employees free basic medical-surgical insurance, offer participation in a major medical plan on a contributory basis.

The current downturn in business conditions could very well accelerate the current trends toward providing a health package for employees, either on a joint employer-employee premium payment basis or as a bonus from the employer. The first great development in pre-paid medical care plans came during the years following 1929, when family incomes simply could not be stretched to cover serious medical expenses. Although there is no suggestion of 1929 in the air, the fact that there is a recession at all is affecting people's thinking to the point where insurance against all unanticipated medical expenses is becoming increasingly attractive to them.

Moreover, the growing competition among insurance companies to write such policies is itself spurring the trend as is the willingness of the companies, as they gain experience in all the forms of health protection insurance, to offer group benefits to very small concerns.

Fringe benefits for employees traditionally encompass not only some provision for insurance against the financial losses imposed by illness, but also some plan to provide income for the employee after his retirement, and this becomes increasingly important with the lengthening life span of the average American. In the whole field of pension planning, major trends have been showing themselves during the past few years, too.

Basically, formal pension plans fall into two main categories — insured plans and pension trusts. There are some unfunded plans—plans in which the company simply states that at retirement it will pay the worker some stipulated amount for life without depositing funds to secure that commitment before his retirement, but these are becoming rare. Under insured plans, basically, the employer, or employer and employee in combination, pay premiums to an insurance company toward the purchase of guaranteed annuities for the worker or deposit funds with an insurer which are

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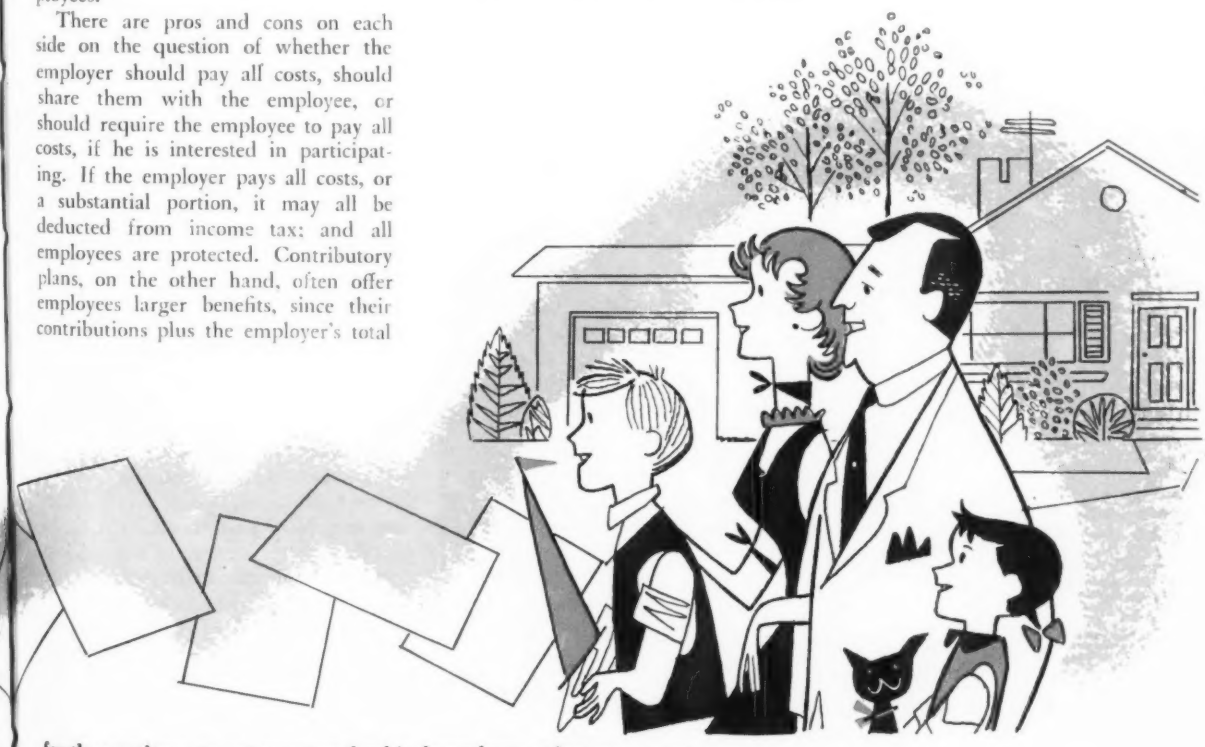


for the employee to get coverage for his dependents at low group rates

Bank reduces account posting to single operation

Battery of National Cash Register Post-Tronic bank machines simplifies special checking account posting at The New York Trust Co.—

IF, TODAY, THE EXTENT to which automation can prove beneficial is measured in direct ratio to the volume of work to which it will be applied, the reasons why many manufacturers have concentrated on heavy-duty equipment during the past few years are apparent. Likewise—and necessarily—banks, insurance companies, brokerage houses and other types of firms which specialize in servicing the savings and investment finances of vast numbers of clients have been among the pioneers in installing the latest systems designed to speed and simplify account processing.

One of the most recent, and successful, of these marriages between technology and massive data requirements has served a dual role of helping establish a newly-developed electronic bank posting machine and enhancing the efficient and accurate handling of the special checking accounts of a large New York bank.

The institution is The New York Trust Company. Its new data processing tool is the National Post-Tronic, manufactured by The National Cash Register Company, and installed in the bank's Manhattan headquarters last August. This month, having passed the threshold of its first half-year anniversary, operations have disclosed the "perfect blendship" (as the popular song goes) between the work loads of the former company and the machinery of the other.

The Post-Tronic is a comparatively new machine, released for sale in October 1956, and designated by NCR as the first machine to offer "practical electronics" to bank bookkeeping departments. Working in conjunction with a numeric (either straight or alpha) account coding system, the machine's primary duties involve depositor accounting, which represents by far the largest record-keeping activity of any bank.

The first in NCR's series of progressive steps toward overall bank automation, expected to culminate two years hence in production of a complete electronic check automation program, the Post-Tronic was introduced into The New York Trust for three specific reasons. These are, greater efficiency of operation and, in turn, improvement of service to customers; reduction of the volume of posting errors; and conservation of operating costs while allowing for future expansion of business. The trust company's installation of a battery of five Post-Tronics represented the second in New York City and the fourth in the United States. (The first installation in New York City was undertaken by a much larger institution which, as yet, has not converted all its data to a numeric code system; New York Trust, then, is the city's first to operate at full capacity within the framework of the machine's operating requirements.)

The handling of special checking accounts, as most bankers will testify, can be both a costly and time-consuming process. The New York Trust, for example, services about 12,000 of these accounts; and if we assume ne-

Five Post-Tronic units are placed in the bank's Bookkeeping Department, adjacent to statement-ledger tubs and check-sorting clerks (background)

Ten magnetic tapes on backs of Post-Tronic statement-ledger forms guide machines in verifying operations

gotiation of ten checks a month for each account, a bookkeeping staff is responsible for the identification, recording, computation and proving of some 120,000 transactions every month, every month in the year.

Previously, the bank processed these accounts in the time-honored "single posting" manual manner, supplemented by standard mechanical bookkeeping machines. This procedure implies that a depositor's ledger sheet is withdrawn from a file, inserted into a machine and his old account balance entered manually into the keyboard. After this, his charges and deposits are recorded, and the posting machine finalizes the process by calculating and printing new account balances.

Checks were sorted by hand in the department, and account sheets were extended on active accounts. Old balances were listed on these extended sheets, and the latter were returned to proper ledgers. Another clerk would select these sheets all over again, locate the proper line on her machine and post entries. After posting was completed, the totals of the old balances, previously extended, were matched to the totals of the pick-up balances of the new posting. Since the margin for error, owing to the great amount of manual posting entailed, was wide, both the proof and overall control of check processing were difficult to achieve with a high degree of regularity.

After reviewing accomplishments to date, however, the New York bank is able to report that, with the aid of the Post-Tronics, special checking account posting poses few, if any, problems. In the words of John L. MacDougall, assistant vice president in charge of the Bookkeeping Department, the bank now enjoys "a true single-posting machine operation."

Posting almost foolproof

Since introduction of these machines, clerks are no longer required to extend account sheets, and proof runs are handled automatically by the machines themselves. Thus, if posting has not become completely foolproof (and even this doubt must be held in reserve, pending an individual's observation of the machines in action), the department has been provided with absolute control of check processing activities—or, in Mr. MacDougall's terminology, "sure death posting." This is due largely to the machines' natural abhorrence of misposting. They halt their own operations whenever a mis-matched account ledger and check are entered.

Checks and deposits received by tellers during the preceding day are delivered by the bank's Clearance Department to Bookkeeping each morning at 9. Sorting of these items, which remains a manual operation, ensues, followed by actual posting. This posting generally is concluded by 10:30 that morning. Daily proofs run on each of four ledgers consume about one hour's time. Additional batches of checks are relayed to Bookkeeping at about 2 p.m. Similar procedures of sorting and posting follow until about 5 p.m.

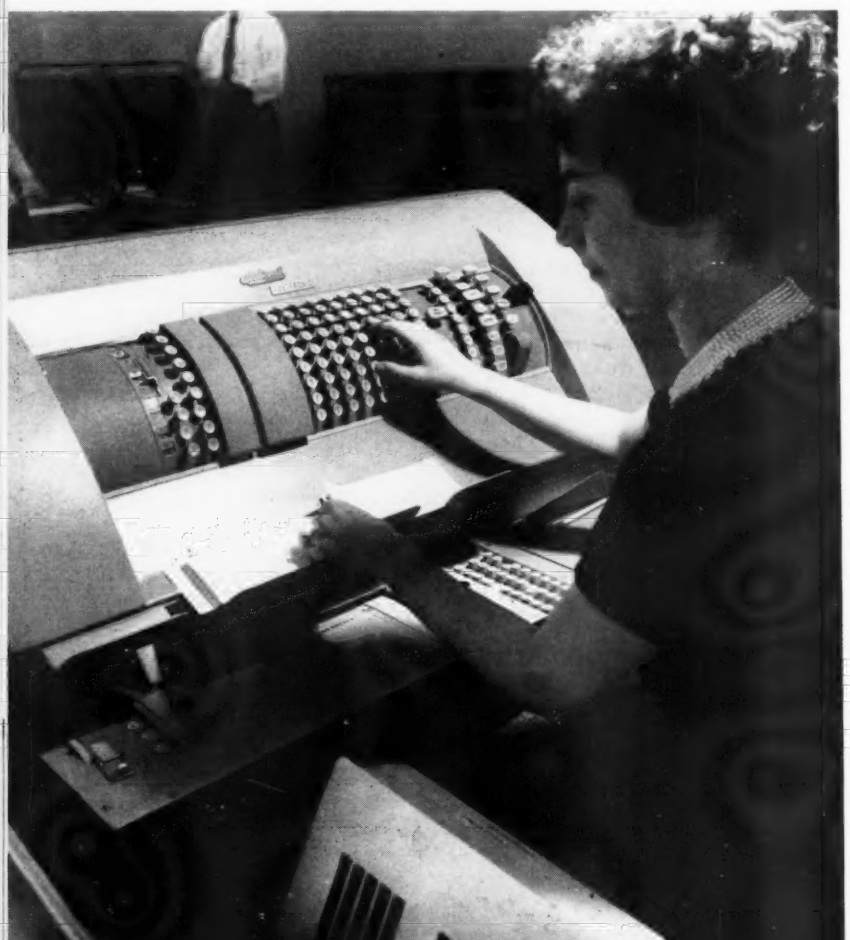
If it is acknowledged that a company must first determine the capacity and capability of a machine before programming its applications, let us examine the characteristics of the Post-Tronic and, following this, the extensive preparation which the bank undertook to insure the success of its installation. The fact that orders for its Post-Tronics were placed on the morning the machines were announced at a bankers' convention in Los Angeles, testifies to its confidence in the machine from the start. The fact that the Post-Tronics swung into full-operating capacity on the very day they were installed, indicates the time and research which the trust company devoted to preliminary planning.

The Post-Tronic, which is about the size of a standard desk, includes on its printing table an electronic "comparator" which functions as an input and "comparing and verifying" device. The machine encodes numbers indexed on

its account control keyboard into the magnetic fields of Post-Tronic statement-ledger forms, and proves proper account selection. This proving is achieved by the machine's comparing the indexed number with the number encoded on the forms. Two signal lights are provided — one indicating that the comparator is in use for electronic encoding, the other indicating a discrepancy or agreement between the number indexed on the comparator and the encoded number read electronically by the machine.

Ten magnetic tapes, resembling black stripes, run lengthwise along the backs of Post-Tronic statement-ledger forms and guide the machine in verifying its posting operations. The machine is equipped with an electronic reading and recording mechanism, and the magnetic tapes allow for storage of data on conventional ledger sheets through magnetic impulses, as well as in the form of printed figures on customer statements.

Check count and account balances are transferred and verified electronically, and proof of correct amount postings is established by accumulation of debit and credit totals during the posting run. The only figures entered manually into the machine are individual debit and credit amounts, indicated on checks or deposit slips. Post-Tronic records—statement, ledger and audit journal—are posted simultaneously in original print.



Post-Tronic encodes numbers indexed on keyboard into magnetic fields (lower left) of statement-ledger forms and proves account selections

NCR engineers were assigned the task of formulating the design for the Post-Tronic almost ten years ago. The first engineering prototype was completed in 1950, followed by a second shortly afterward. Field trials were undertaken, and the machine, in its finished form, was announced at a convention of the American Bankers Association, held in October 1956, in Los Angeles. First bank to install the equipment was The Passaic-Clifton (N. J.) National Bank. Meanwhile, The New York Trust's orders had been placed and possibilities of applying the machine to its own data processing patterns were investigated.

Since efficient handling of large volumes of accounts is best achieved by reliance upon account numbers, as opposed to account names, the bank adapted, under Mr. MacDougall's direction, a numeric system. By means of this system, the last two digits and check digit of account numbers are indexed on the comparator. The statement-ledger card is selected and inserted into the Post Tronic, which then verifies account selection through comparison of numbers. As explained previously, the machine will not function if the wrong account has been selected.

First step was to assign numbers to all special checking accounts maintained at the home office and six branches. Each of the offices was given a prefix "branch number"—number 1 for the headquarters office, numbers 2 through 7 for each of the remaining Manhattan offices. After designation of branch office numbers, account numbers — supplied in chronological order — were listed, followed in turn by the digit number. This latter number, when indexed on the keyboard, activates the machine in identifying and posting correct accounts.

The method chosen to compute digit numbers—complicated, perhaps, in formula, but simplified in execution—is this: Multiply each figure of the ac-

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The how, when, and where of effective procedure audits

Devising improved procedures, and getting them adopted is only half the job; they still must be checked in use—

by Thomas G Horti
Methods Analyst, Lockheed Aircraft Service, International, Inc., New York

THE PROCEDURE AUDIT or procedure follow-up is perhaps the least popular of the various phases of systems work we are called upon to perform. This feeling can best be described in the words of the old Hungarian proverb: "Only cabbage is good warmed-over!" By the time a procedure — particularly a complicated one, as so many of them are — is planned, sold, tried, revised, re-revised and finally installed, most of us lose the initial enthusiasm we first felt for this particular project. The prospect of following it through a couple of more times, perhaps having to reopen it, is singularly unattractive. But unfortunately we know from experience that no procedure is complete until the human element has been taken care of: What looks good on paper is not necessarily going to be good in practice. The follow-up cannot be shirked.

Two methods of auditing

What is the procedure audit? Like any other audit it can be one of two things: It can be a spot check of one or more key areas; it can be a detailed investigation. In the procedure audit that spot check can be as simple as a telephone call to responsible supervision: "How is the procedure working? Are all your requirements satisfied?" In other instances the spot check can include a look at completed forms reports control logs in addition to or instead of the telephone call.

The detailed audit on the other hand is very similar to the original procedure survey: It involves a step-by-step "walk-through" of the procedure, the tracing of distributions, perhaps statistical studies to substantiate control data. The kind of detailed investigation is usually reserved for complex procedures, especially if management desires detailed before-and-after statistics and/or if there was controversy over the procedure prior to installation. For most run-of-the-mill procedures, however, the spot check or spot checks are sufficient.

When should the procedure be audited? Ideally, every procedure in the manual should be periodically audited (on a scheduled basis). This is not possible or not practical for most of us. The next best arrangement would seem to be a spot check approximately a week after installation, followed by another spot check or a detailed audit (whichever is indicated) 3 to 6 months later. The first check will turn up major discrepancies, controversial areas and the like; the later audit will test both the adequacy of the procedure and the degree of compliance of the various persons and departments involved. In addition, there are usually numerous opportunities to perform

Non-compliance with procedures usually indicates hostility, not ignorance

spot checks while working on related procedures and forms.

The audit itself has three phases. The first phase is the spot check or investigation. After that is completed, the findings must be analyzed; this is the second phase. Is the procedure doing everything it should? Are the forms used in conjunction with the procedure implementing it in the best possible manner? Are the people involved adhering to the procedure (presuming the procedure is good)? Phase three: What to do about it. If changes are indicated, can they be made within the framework of the procedure, or is a complete revision necessary? Write supplement? Back it up with a job instruction? Redesign form? Hold more indoctrination sessions? Let it ride?

Supervisors should be consulted

Whatever the findings, whatever the recommended action, all deviations, all inadequacies should be discussed with responsible supervision and, if necessary, with higher management. Whatever action is to be taken should be arrived at with their help and consent—just as the original installation presumably was arrived at.

A special word about non-compliance with the procedure. This is the most ticklish area of the procedure audit. Although we presume adequate indoctrination at the time of installation, non-compliance could simply be unawareness on the part of the individual—but more often it means hostility. In some cases this can be overcome with an additional selling job, but in many others it means going to line supervision for corrective action.

Diplomacy called for, too

At this point all the diplomatic skills of the systems man are called into service. He must impart to line supervision the information that one of their people—possibly one of their most thought-of people—is refusing to adhere to the procedure. But the systems man must do it so tactfully that at no subsequent time will the finger be pointed at him as informer, axe-grinder, or cry-baby. He must imply that this person does not fully understand what is expected of him, and that he (the systems man) is inadequate to get the point across, so he is asking for help in further indoctrinating this person—and, of course, this is not to reflect discredit on that employee, please . . . ! This isn't easy—it sometimes goes against the grain. There comes the occasional moment in every system man's job when he gets tired of turning the other cheek, and speaks sterner words to supervision or makes a more direct report, than indicated above. Each such catharsis is a potential area block for effective systems work; not only the individual but the supervisor may be alienated. It is best to save such occasions for those incorrigible reactionaries whose opposition to change—any change—is already a well-known fact to their co-workers.

As in the initial preparation of a procedure, limits must be set, the scope of the audit must be defined in advance, so that new problems are not raised to cloud the picture you want to look at. Generally, the scope of the audit will embrace the whole procedure, or even a system of related procedures. Occasionally, however, it is wise to audit only one part of a procedure at a time. For example, in auditing a payroll procedure, a complete follow-through from time card to canceled paycheck can be a time-consuming effort. The actual preparation of the payroll can be the subject of one audit, the distribution and subsequent reconciliation the subject of another.

Earlier, we mentioned the periodic scheduled audit, which would, over a given period of time, give the procedures manual complete coverage. In many companies this function is fulfilled by the regular audit schedule of the company's internal audit staff, or by external auditors. In those companies, however, whose auditors limit themselves to (or are limited to) mostly financial operations auditing, the systems staff should take it upon itself to conduct a continuing program of procedure audits. The easiest way to set up such a program is to divide the procedure manual into blocks of related procedures, and to audit them as entire systems. With so many companies considering EDP today, this type of audit is being performed in the guise of feasibility studies, and a continuing program should not be hard to set up, using the initial survey in those feasibility studies as a starting point.

Management support essential

The final point we should consider in respect to procedure audits is the role of management in the audit. The backing of management is all-important in any procedural effort. Only management can set the central goals that bring the endeavors of the many segments of the organization into one unified picture of operation. This unity of purpose is necessary for both the production and for the acceptance of a procedures program. Some management backing can be presumed in the fact that procedures have been written in the first place. But stronger, more positive backing is needed for a procedure audit program—for these reasons:

(1) There are always procedures in

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Why can't we standardize forms for inter-company comunications?

If all companies were to agree to use a standard information request form, with provision for reply in the basic form, savings could result all along the line—

by Richard Paulson

IN JUST ABOUT every type of business today, the amount of paper work is becoming enormously greater. Everyone, everywhere, seems to have his own idea on how his own operation is to be conducted, and consequently it is set up without consideration for the overall operation. If the system bogs down, another form is created and added to the already overburdened papermill. As a specific example, one of the functions that exists in practically every industry today concerns itself with a particular communication problem; that of maintaining a program for the interchange of information.

Each industry, agency, or concern, will request information from another by means of its own particular request form. The receiving agency or concern will receive these forms and usually answer this request with one of its own forms. In doing so, there is usually another number assigned to its own letter of transmittal, and a cross index system becomes immediately necessary in both companies. Thus begins the papermill.

Instead of generating new forms which later become parts of other forms, I propose we start all over and generate an all-inclusive, standard form for use by every type of business concern. After all, we manufacture parts to standard specifications, why can't we request and answer correspondence in a standard manner? In this particular case, each concern would receive a copy of the form as it appears before completion—Figure 3. Directions are easy to follow, and once this form is accepted, its wide circulation should effectively reduce the present confusion associated with information transmittal

COMPANY

Attn:

This agency is engaged in research and development activities under contract with the U.S. Department of Defense. The following information is required for application to these programs:

One copy of:

One copy of:

One copy of:

Your assistance in identifying and obtaining this material will be greatly appreciated. Please advice of any charges before shipping.

If we may be of any service to you, please let us know.

DOCUMENT REQUEST AND TRANSMITTAL FORM

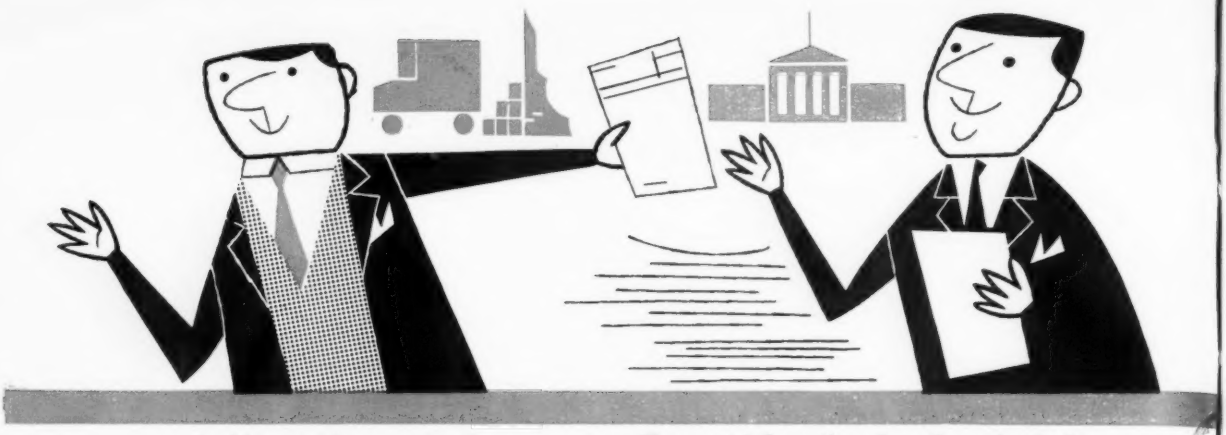
FROM:	DATE:
	In reply, please refer to:
TO:	

1. ☐ The following listed report(s) is/are requested for official use: (For Retention if Possible).
2. ☐ The following listed report(s) is/are inclosed for retention.
3. ☐ The following listed report(s) furnished this office on loan is/are returned herewith.

Report

4. ☐ The following listed report(s) is/are inclosed on a *loan* basis for days, expiring
5. ☐ See below.

Typical current request forms all too often simply invite reply on the receiver's own form



As things stand now, one concern or agency will request information of another using its form . . .

and its related filing problems. It is the author's contention that this proposal should be explored thoroughly by all interested concerns and if possible, put on a trial basis to prove its soundness and merit. Criticism is expected, for no one is infallible. However, the author has had several years of experience with various paper work systems, and believes that this proposal would go a long way toward improving the operations and efficiency of many a business concern today, whether the business is large or small.

In order to illustrate the various methods by which information requests can be handled more expeditiously, a flow diagram is also attached and is noted as — Figure 2.

Occasionally, requests for information are directed to large companies which operate with a number of different divisions. Sometimes the request goes to the wrong division. Rather than return the request to the requester, it would be more expeditious to type in the "ALTERNATE RECEIVER" (if known), and then forward the requests to them rather than return it to the sender.

To completely understand the process that would take place using this system, the following steps are set forth as briefly as possible;

1. The request is initiated, and if it does not have to go through a screening agency, three (3) copies (white, green and red) are forwarded to the "Receiver" and the fourth (4th) copy (the yellow page) is retained until the request is completed.

2. The receiver of the request assembles the information, completes the form and returns the (green) "shipping copy" with the attached documents. (If the material is only being lent, the red copy is also returned to the requester.) If no documents are available for transmittal, the green copy will act as a letter of acknowledgment. In other words the receiver of the re-

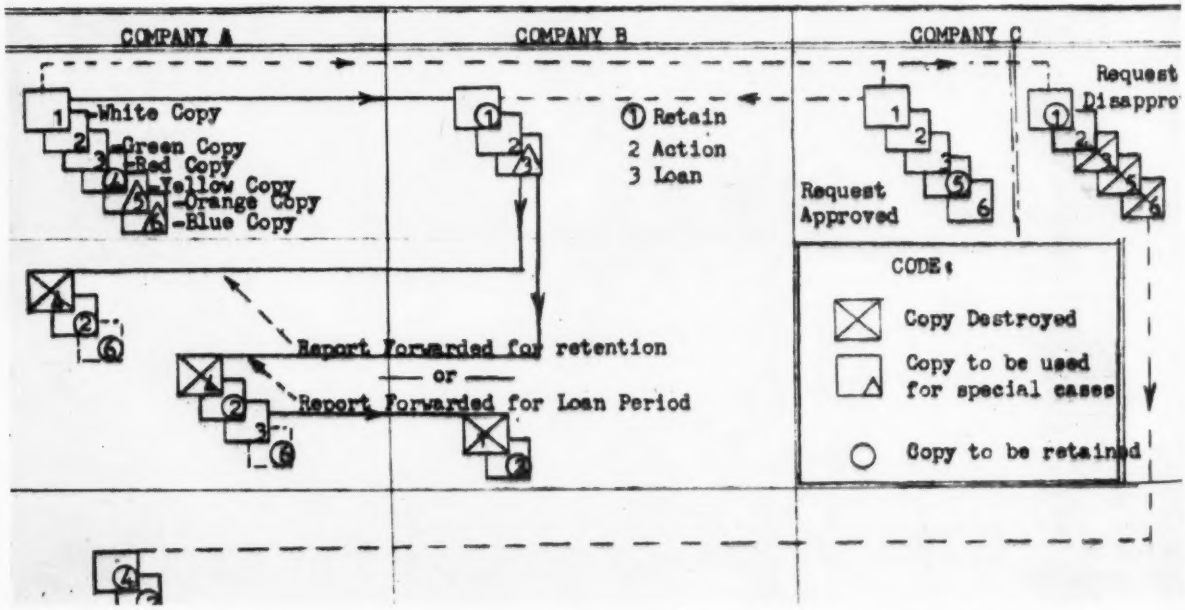


Figure 2. If the request for information must be screened by a military or government agency, all copies except the yellow file copy are sent to the screening group. The agency either approves or disapproves the request; if approving, retains orange copy, forwards all other to receiver; if disapproving, agency returns blue and green copy to sender, retains orange, destroys the rest.

. . . the receiver will answer the request with his, and a new paperwork treadmill has begun

quest will indicate (in block 16, on both the white and green copies) the reason why the information is not being forwarded, and then return the green copy to the sender.

3. If desired, internal distribution of any of the copies of the requests can be made at the discretion of the Requester. This can be done by means of a verifax unit or similar process. It then would become a simple matter for anyone on the internal distribution list to call his distribution center, reference the request number, and immediately know the status of the request. However, if the control centers are properly established, there should never be a need for internal copies, for one of the purposes of this entire proposal is to regulate the amount of file material which normally unnecessarily clutters up an area when distribution of records becomes out of control.

4. The forms should be pre-printed as shown and combined via the method indicated. This particular method of collating (6) papers and (5) cartons, with a "perforated removal line," would provide the simplest and easiest means for recording and filing such data. (*To page* 62)

The author's proposal that "we start all over" and aim at development of all-inclusive, standard request forms for use by various types of business concerns may strike many readers as an oversimplified, and perhaps even unworkable approach to cutting down paperwork, applicable in the instance given, but of little value elsewhere.

We present the article as a stimulus to further investigation and evaluation of the basic idea of intercompany forms standardization by office administrators.

The Editor

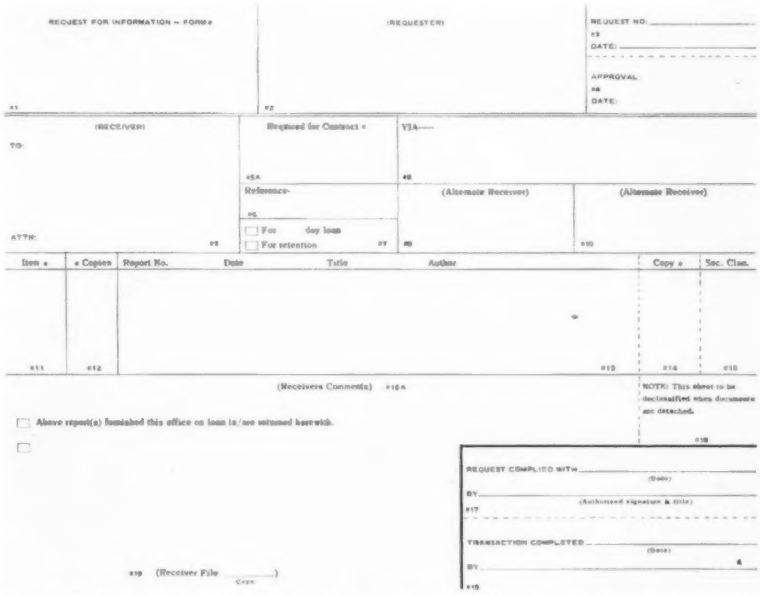


Figure 3. Proposed universal multi-part form. Block 1 would specify the individual, section or department requesting the information; Block 2, the company of the requester. Block 3 would carry the requester's file number and date request is initiated. Block 4 would indicate screening agency's approval or disapproval, if request must be relayed through such an agency. In Block 5 would be entered the name of the company being asked to furnish the information, and the particular person or department in that company to whom the request is addressed. Blocks 5a, 6, and 7, are self-explanatory. If the request must be screened by a government agency, full details on the agency concerned may be entered in Block 8. Blocks 9 and 10 are for use of receiver, if request has been misdirected to him, and he must forward it on. Blocks 11, 12, and 13 specify material being requested, while 14 and 15 are for use if material to be sent is considered "Classified" information by military. Block 17 is filled in when receiver fills request; Block 18 is filled in by originator when requested documents are received and transaction is complete.

American Colortype places emphasis on "big office" advantages

Bright, cheerful atmosphere pervades executive secretary's office

New offices of color printing firm stress individuality in layout, furnishings—

DURING the recent, prolonged upsurge in construction of massive office buildings to accommodate the home offices of giant corporations, what has happened, architecturally speaking, in the design and treatment of the new quarters of the large or medium-size company?

Certainly, with so many of these firms in the process of rejuvenating their interiors or transferring entire operations to new structures, individual planning and layout must be provided for them by the alert designer. If he succeeds, the intimacy and functional layout usually associated with this type of office will compare favorably to the design of its larger counterpart, which very well might occupy the first several floors of the new building!

In January of 1957, M. Riklis, chair-

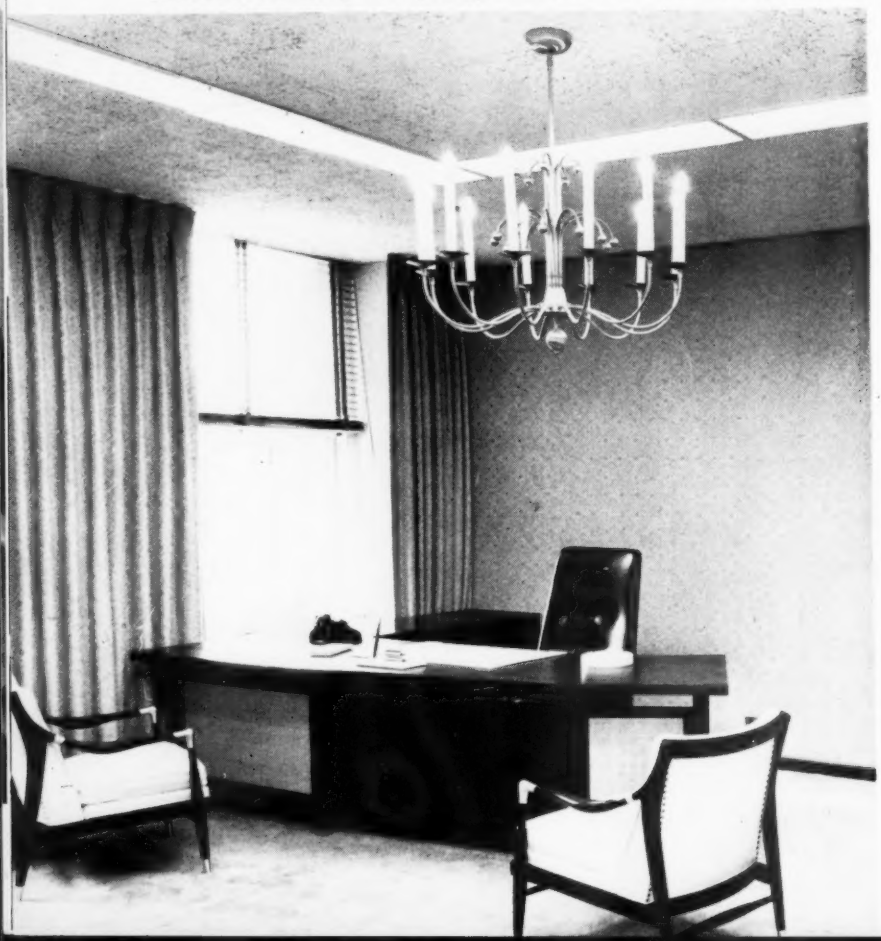
Comfortable small conference room features built-in television set and bar

White leather chairs, walnut desk and paneling distinguish board chairman's office

Executive dining room displays Japanese panels on two walls, connects to fully-equipped kitchen

Large board room is highlighted by luminous ceiling, light fabric chairs, deep pile green carpet

Guest office features gold carpeting, blended fabrics on walls, draperies



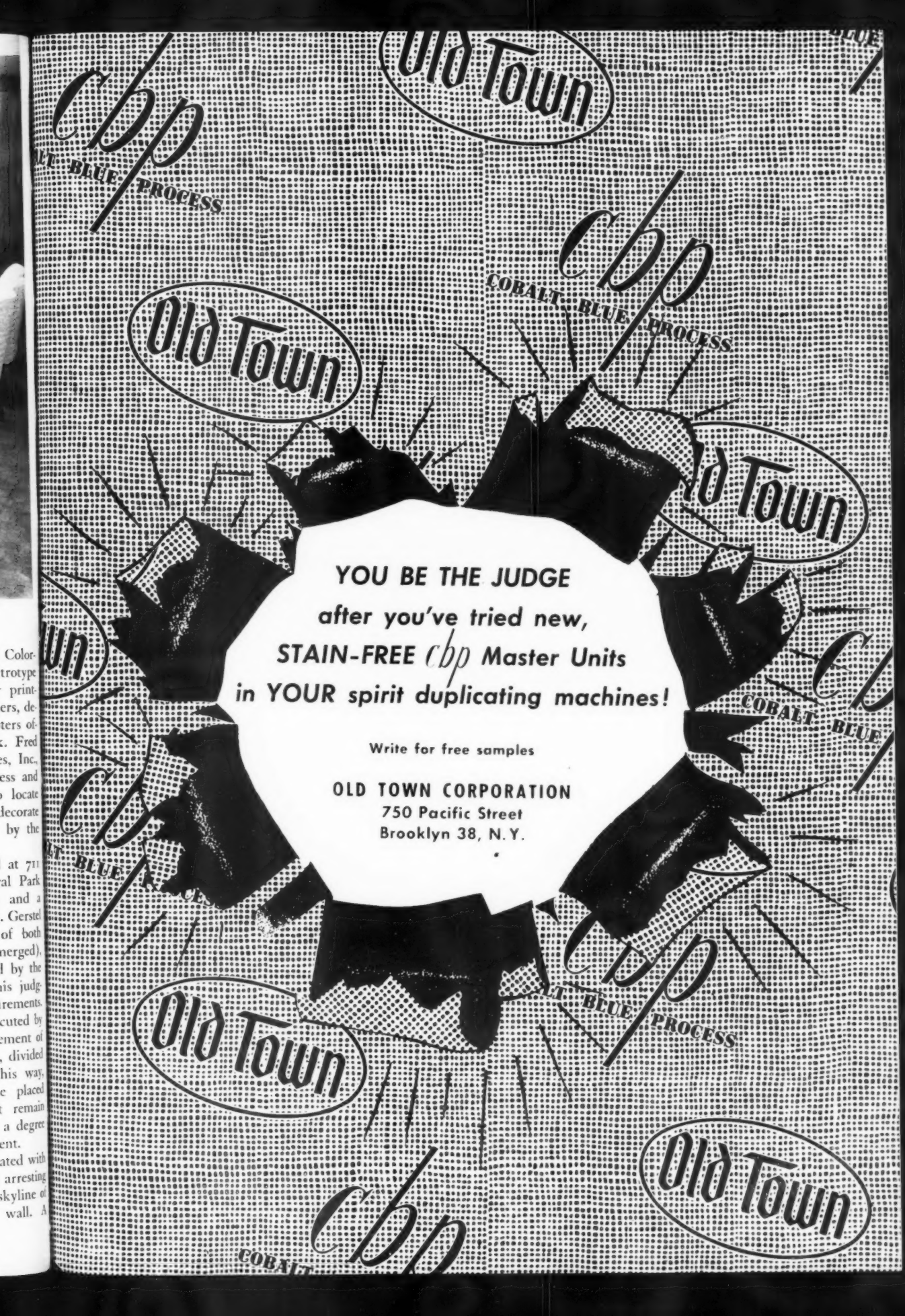
man of the board of American Colortype Company and Rapid Electrotype Company, which provide color printing for magazines and newspapers, decided to combine the headquarters offices of both firms in New York. Fred V. Gerstel of Gerstel Associates, Inc., New York designers for business and industry, was called upon to locate available space and to build, decorate and furnish the new quarters by the following June.

Suitable space was acquired at 711 Fifth Avenue, near the Central Park area of midtown Manhattan, and a long-term lease was signed. Mr. Gerstel was informed of the needs of both companies (which have since merged), and he was given a free hand by the board chairman to exercise his judgment in answering these requirements.

The layout devised and executed by Mr. Gerstel called for arrangement of three parallel banks of offices, divided by two wide passages. In this way, related work areas could be placed adjacent to each other, yet remain "isolated" enough to provide a degree of privacy for each compartment.

The elevator lobby is decorated with beige vinyl tile floor, with an arresting mural depicting the famous skyline of New York dominating the wall. A

(*To page* 80)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How to set up effective and equitable promotion policies in the office

Sound and logical promotion system, based on principles known to all employees, can pay dividends to both management and workers. Here are elements of such a system—

by Robley D. Stevens
Management Consultant, Washington, D. C.

IN MOST CASES, office administrators find their days too full to spend time and thought on all the problems they would like to solve. The daily pressures to take care of immediate details often obscure problems which are, to be sure, less urgent, but which nonetheless affect office management-employee relations.

It may be useful to look into your office promotion program, which is discussed herein, but this is not absolutely necessary, if your firm has an effective one.

Most of the methods recommended are stripped-down versions of proven techniques commonly used by larger offices. The administrator should try them on for size because, as in so many aspects of personnel promotion programs, there is no sure-fire way of having the best one.

From the beginning of the industrial revolution until recently, businessmen were primarily interested in the factory. Attention was always focused on production and sales problems. This was the vital area. Today, however, the administrator is devoting some time and energy to the office promotion program for obvious reasons — to reduce turnover to an irreducible minimum and to obtain greater employee incentive and efficiency.

Most office administrators already know a lot about a promotion program — what it is, why firms have it, and how it works. Its success and effectiveness, however, in general depend heavily upon his active interest, his integrity, and his skill in applying it.

To understand the office promotion program we must recognize certain distinguishing features of office management employment. In private business, personnel promotion policies are usually established in a number of ways. For instance, the basic governing policies are set up by management executives, in their capacity as representatives of the board of directors of a corporation.

Obviously, office employees have a legitimate interest in the promotion system that will affect their careers, even though they are not entitled to a voice in its determination. Of course, they are in a position to know if any inequities exist, and are able to offer suggestions for overcoming such situations.

The provisions of your office promotion program must be determined by management, but many of the provisions can be determined on the basis of the judgment of the individual administrator. For example, he should be concerned with the following questions: What office positions and what types of actions should be covered by the promotion program? What will the area of competition be for different office types and grades of positions? How will preliminary screening be carried out to give consideration to all who meet minimim office requirements? In general, what selection methods will be used? How can the records of office employee qualifications be kept up to date and usable? And, how shall office employees be notified of the operation and results of the promotion program?

In filling his key role in the promotion program, the office administrator has an assortment of company rules, tools, and guide lines to aid him. In some areas, his course of action is spelled out in detail by company rule and regulation; in others, he has considerable leeway and must rely to a large extent on his own good judgment.

Job classification systems have two principal purposes in the office. The first of these is to provide a sort of cataloguing system for the many kinds of office jobs he deals with. Without job classification, it would be impossible to administer office employment fairly and economically. With a work force of many or a few, office jobs must be arranged in some orderly way. For that reason, jobs that are generally alike in respect to the kind of work done and the skills needed to do them are grouped together and given a label. For instance, there are many office positions involving typing, stenography, filing, and related work which are

(*To page* 43)

Cornerstones of a sound promotion program:

1. Job classification system in which difficulties and requirements of all office positions are accurately evaluated.

2. A general promotion policy, either written or oral, which is familiar to all employees, and which is followed by management.

3. Willingness of management to advise employees ambitious for promotion of measures they can take to train themselves for advancement.

4. Management refusal to set artificial or arbitrary qualifications for jobs that do not require them.

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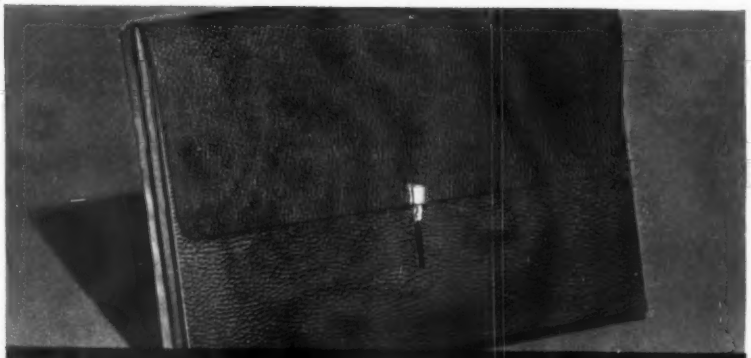

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Promotion—

(*From page* 40)

identified by comparatively few classes, such as Secretary, Stenographer, Clerk-typist, etc. This grouping and labeling —or classification—of jobs permits the office administrator to treat similar jobs alike for all management purposes.

The other major purpose of job classification is to provide a basis for setting pay. With classification, office jobs within a group which are of about the same difficulty can be assigned at the same rates of pay.

Once an office job is established it is up to the administrator to see that it remains accurately labeled as duties and responsibilities shift and change. He usually has a hand in deciding what particular qualities and skills a person must have to do the office work. This not only helps determine the kind and level of the job but also influences the entrance requirements for a whole class of office jobs.

Consistent policy valuable

By setting up office jobs skillfully and making sure that they are properly labeled, an administrator makes possible a sound classification and pay program that serves his best interest, and is fair alike to office management and employees.

Does your office have a policy statement regarding promotions? A definite statement in the policy is often necessary so that all the employees will understand the promotion program in effect.

Within every office—large, medium and small alike—office training, classification, employee relations, and placement activity should be coordinated into a unified approach to the problems of filling each position with the person best qualified to perform the duties and of making the best use of the employee's abilities.

Since the function of the policy statement is to explain the promotion program and guide its operations, it should be familiar to everyone in the office. This may be done by means of a letter, handbook, manual, special pamphlet, or other document that is of some permanence, and can be brought to the attention of new employees at the time of their induction.

No definite pattern can be established for determining the areas of selection to be used in making promotions, since there is no one system that is best for all offices. The extent of areas should be decided with reference to the size of the office organization and to the kinds of positions in the office. Small offices are able in many cases to have an office-wide area of selection for all positions.

The same areas of selection will not necessarily be applied to all positions in an office. As one goes up the scale to positions requiring specialized knowledge and experience, the area of selection needs to be widened to furnish a sufficient number of qualified office employees for consideration and to provide employees increased opportunity for consideration at levels where the number of office opportunities for promotion are fewer.

It should be the responsibility of each administrator, in his capacity as a participant in office management, to make use of the best available people for positions in his office. While it is natural for an administrator to prefer someone whose work he knows to someone he does not know personally, he should be guided by actual, rather than artificial job requirements, and if the employee is qualified for a promotion based upon past performance. Even when office employees meet standards for promotion, it may be desirable to fill some positions through

(*To page* 64)

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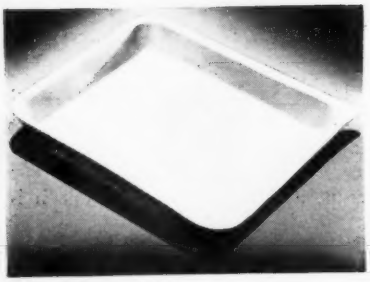


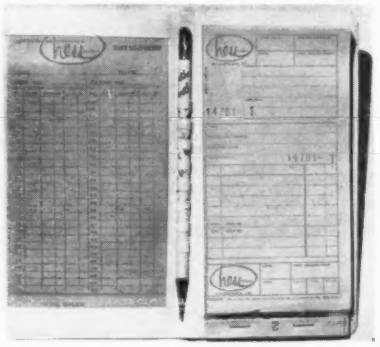
▲ Developing tray
New "Kemlite" reinforced fiberglass developing tray is available in 11 x 14, 16 x 20 and 20 x 24 sizes. Trays are said to be unaffected by all usual photographic chemicals and cleaning acids, chip-proof, non-corrosive. Coral pink inner surface of the tray reflects an off-white radiance. *Litho Research, Inc., 14339 36th, NE, Seattle 55, Wash.* **(A-1)**

New for the office

▼ Office table
Designed by Lee Rosen, this table features one-piece ceramic top, stands 18 in. high. Finished in a matt glaze with

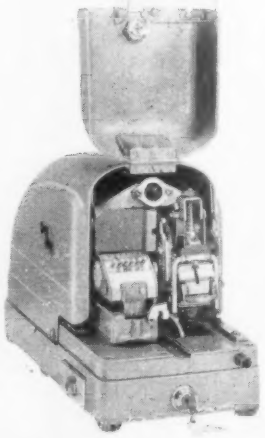
strokes of browns and beiges on sand-colored background; walnut base. Retail price, approximately $110. *Design Technics, 4 E. 52nd St., New York.* **(A-2)**

▼ Promotional designs
Reproduction of trademarks and promotional designs on the outside of protective plastic covers of salesbooks

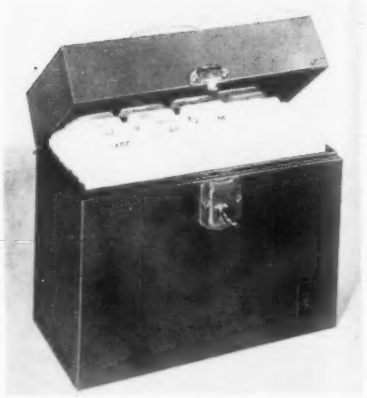


and other business forms is announced by the firm for purposes of company identification. A reproduction of the trade mark of Hess Bros., Allentown, Pa., is illustrated here, designed in blue, green and red on white plastic background. *The Baltimore Business Forms Co., Div. of The Baltimore Salesbook Co., 3120-56 Frederick Ave., Baltimore 29, Md.* **(A-3)**

▼ Receiptor
Electrically-operated, the American Model 225 receiptor perforates customer's receipt with Paid, Date, Location

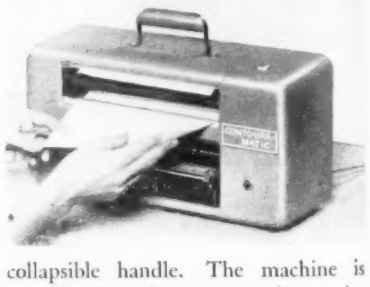


Number, Company Initials and Teller Numbers; prints stub with Date and Teller Number, and automatically detaches stub from receipt. The machine is equipped with door and ignition lock, safety guards and safety switch. *Heller Roberts Mfg. Corp., American Perforator Div., 700 Jamaica Ave., Brooklyn 8, N. Y.* **(A-4)**



▲ Personal filing box
More than 800 documents may be filed in the new "Imperial" personal filing box. Measuring 12½ x 5½ x 10 in., the box is of metal construction, finished in mahogany. It features a bronze medallion as decoration. Available with index folders and lock and key. Suggested retail price, $4.98. *Hamilton-Skotch Corp., Hamilton, Ohio.* **(A-5)**

▼ Photocopier
The Contoura-Matic photocopier measures 15 in. wide and 6 in. deep. It weighs less than 12 lbs., features a



collapsible handle. The machine is capable of turning out 4 copies a minute, and retails at $189. *F. G. Ludwig, Inc., 103 Coulter St., Old Saybrook, Conn.* **(A-6)**

▼ Desk organizer
The U-Bow, an expandable desk rack constructed of aluminum, will expand

from 4 in. to 4 ft. It contains 8 sections, measures 7 in. wide and 9 in. high. *Evans Specialty Co., Inc., P. O. Box 8128, Richmond 23, Va.* **(A-7)**

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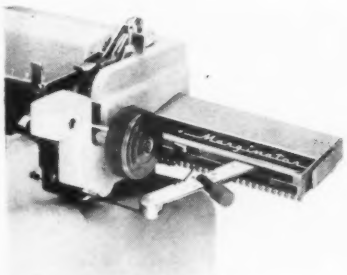
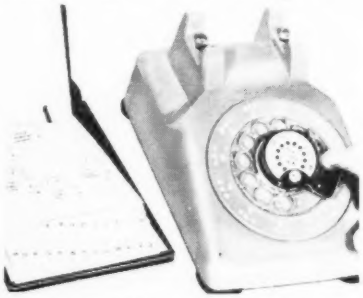


▲ Typewriter justifier

The Marginator evens right hand margins in column widths of from 1¼ in. to widths equal to the typewriter carriage. Two or more columns may be aligned on the same page, without shifting the paper, and the Marginator can be set at neutral, which automatically disconnects it. *Marginator Co., 1121 W. Magnolia Blvd., Burbank, Calif.* **(B-1)**

▼ Number selector

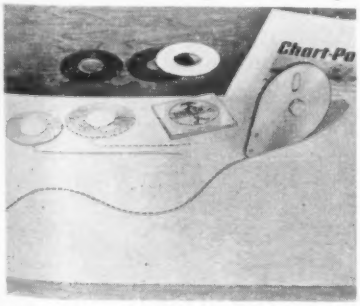
Automatic number selector in this unit indicates each digit to be dialed, including long distance, exchanges and



area codes. Digits are dialed as they appear in lens. Selector fits over dial; index box fashioned in ebony black and gold. Suggested retail, $9.95. *Dial Direct Dex, 209 Los Molinos, San Clemente, Calif.* **(B-2)**

▼ Metal holder-dispenser

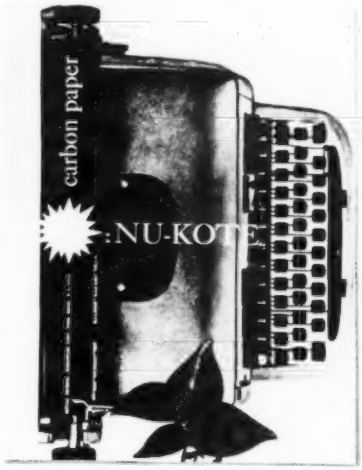
The "Tape-Pen" is a precision-designed and engineered metal holder and dispenser for the company's line of "Curve-Line" tapes. Made in 3 sizes—to fit ⅛, 1/16 and 1/32 in. wide tape



—the triangular-shaped unit measures about 3¾ x 2⅞ in., weighs less than 2 oz. It "rolls on" line of pressure-sensitive printed tape, follows any curve or angle. Available at $6.95 each. *Chart-Pak, Inc., Leeds, Mass.* **(B-3)**

▼ "Carbon" paper

Using a plastic coating and wet ink instead of waxy carbon, "Nu-Kote" typewriter "carbon" paper is available



in one weight and finish, and in 2 boxed sizes—letter and legal, 100 sheets to the box. Suggested retail prices, $4.50 and $4.75. *Mittag Div. of Burroughs Corp., Detroit 32, Mich.* **(B-4)**

▼ Desk-top accessory

The "Secretariat" holds up to 500 standard-size business cards. It is styled in midnight-black tooled in 14

kt. gold, lined with red velour, and paneled in gold-grained Korina mahogany with a hinge of polished brass. The case lists at $6.95, and can be personalized with black-on-gold initials at 25 cents a letter. *Bull's Eye Products Corp., 56 W. 45th St., New York 36.* **(B-5)**

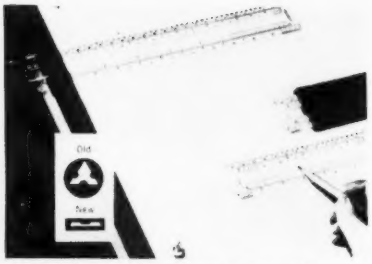
▲ Vending machine

This new vending machine dispenses cold milk, flavored milk, and a new pre mixed "chocolate shake" drink with a milk base. All drinks are served in cups at a temperature of 32 to 33 degrees. Each vendor holds 2 5-gallon or 2 10-gallon cans of product, and measures 34¼ in. wide x 27 in. deep x 69 in. high. *Glascock Bros. Mfg. Co., Muncie, Ind.* **(B-6)**

▼ Storage cabinet

New storage cabinets feature rounded front corners, positive 3-point locking device, polished chrome handle and

built-in lock. Four shelves, adjustable every 2 inches without tools, available; extra shelves may be added. Cabinets are finished in grey baked-on enamel. *Lyon Metal Products, Inc., Aurora, Ill.* **(B-7)**



▲ Pocket, desk-model scale
This new scale displays 8 different scales on a single surface, each of which features its own straightedge, calibrated to professional standards. Scales are made of clear acrylic. Six-inch leather-sheathed pocket models retail at $2.25, the unsheathed 12-inch desk scale at $3. Both carry graduations of ⅛, ¼, ⅜, ½, 1, 1½ and 3 in. to the foot. *A. Lawrence Karp, 16 Putnam Park, Greenwich, Conn.* **(C-1)**

▼ "Personal" calculator
The BDC Contex has a capacity of 10 digits entered, 11 total. Standard 10-key operation used. Sub-totals are

shown at each step, subtraction is direct. Overall measurements are 10 x 7 x 3½ in.; weight, 6 lbs. *Bohn Duplicator Corp., 444 Fourth Ave., New York 16.* **(C-2)**

▼ Portable dictation unit
Transistorized and self-contained, the "200-B" portable dictation unit is pow-

ered by 4 standard flashlight batteries, weighs 6 lbs. The 15-minute plastic recording disk may be played on 33⅓ RPM home phonograph, is mailable in standard business envelopes at regular letter rates. *SoundScriber Corp., No. Haven, Conn.* **(C-3)**

▼ Paper destroyer
The "Confidential" paper destroyer reduces heavy cardboard and paper to a fine, white ash by means of hydroxyla-

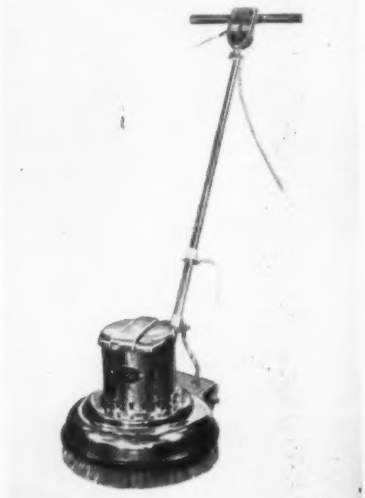
tive combustion. Combustible material can be loaded in packages and bundles, without need for separation. *The Silent Glow Oil Burner Corp., 864 Windsor St., Hartford 5, Conn.* **(C-4)**

▼ Wastebasket
Fiberlite, a new fiber glass wastebasket, is leak-proof, impervious to liquid and rust stains. Color is permanently pig-

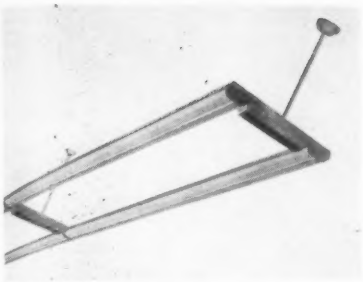
mented throughout the fiber glass material, will not fade or require refinishing. Available in sea green, copper tan, seal grey and black. *The Globe-Wernicke Co., Cincinnati 12, Ohio.* **(C-5)**

▲ Imprinting machine
The Davidson Dual-Lith, Model 245, imprints booklets, cartons, blotters and "odd" shaped material. It imprints from a variety of plates or type, and also numbers and/or perforates. The 245 handles sheets from 3 x 5 to 10 x 14 in., in a wide range of stock thicknesses, including envelopes, with up to 6000 impressions an hour. *Davidson Corp., 29 Ryerson St., Brooklyn 5, N. Y.* **(C-6)**

▼ Floor maintainer
The Clarke FM-13 lightweight floor maintainer has a 13-in. diameter brush, weighs 36 lbs. Wheels are mounted in



the main frame for portability; adjustable handle may be set to desired heights. Main frame, motor housing, and cap are polished aluminum, handle is chrome-plated. *Clarke Sanding Machine Co., Muskegon, Mich.* **(C-7)**



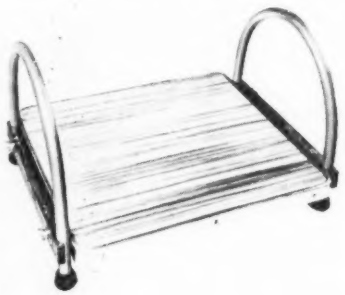
▲ Lighting system

Uniform brightness ratios shed by the new "Sightline" indirect lighting system are designed to create an illusion of a luminous ceiling. Features include minimum use of cross-channels in the design (spaced 8 in. apart), a spring-leaded leveling device, insulation of the unit against dirt accumulation. Units may be installed in continuous rows or individually. *Sunbeam Lighting Co., 777 E. 14th Pl., Los Angeles 21.*

(D-1)

▼ Foot support

Adjustable "efficiency booster" has a top surface area 14 x 16 in., is constructed of heavy plywood covered



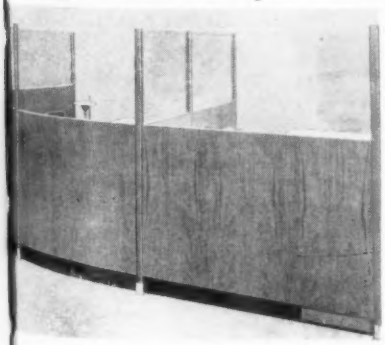
with marbolized linoleum and metal trim. Designed for persons required to work with seating units too high from floor, the unit permits height adjustments of 1 to 6 in. *Standard Foundry Products, 412 Laurel St., Reading, Pa.*

(D-2)

▼ Space dividers

Designed to create semi-private office areas, office corridors or department enclosures, "Exec-Units" feature hollow core panels with plywood surfaces. Units are available in pastel shades of grey, green or tan, or natural sliced walnut. *Exec-Units, Div. of General Plywood Corp., Market at 32nd St., P. O. Box 1403, Louisville 1, Ky.*

(D-3)



▼ Shelving application

A wide selection of slotted uprights and shelf brackets, available in a variety of finishes to blend with decor,

makes possible shelf applications to fit changing storage requirements. The equipment is available for use on walls or partitions, et al. *Reflector-Hardware Corp., 1400 No. 25th Ave., Melrose Park, Ill.*

(D-4)

▼ Desk safe

New Guardex desk features a built-in, fireproof safe, concealed by a single door and controlled by a Yale lock.

Unit is installed in either side of standard, double-pedestal secretarial desk. *Bentson Mfg. Co., Aurora, Ill.*

(D-5)

▼ "Packaged" office unit

Combining Remington Rand office furniture and business machines with Hauserman movable low-level "Divider

Wall" partitions, this "packaged" office unit is a joint product of both companies. The merchandising plan, the companies report, reflects a growing trend toward lump sum bids on complete office interior projects. Both companies will sell and service their own products. *Remington Rand, Inc., Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, and the E. F. Hauserman Co., 6800 Grant Ave., Cleveland 5, Ohio.*

(D-6)

▼ Wood frame chair

A new addition to the firm's "Blue Chip" line of chairs, tables and sofas designed by Ken White Associates, this

wood frame chair is covered with vinyl. Simplicity of design makes removal of seat unit for re-upholstering a matter of removing a few screws. *Thomas Furniture Co., High Point, N. C.*

(D-7)

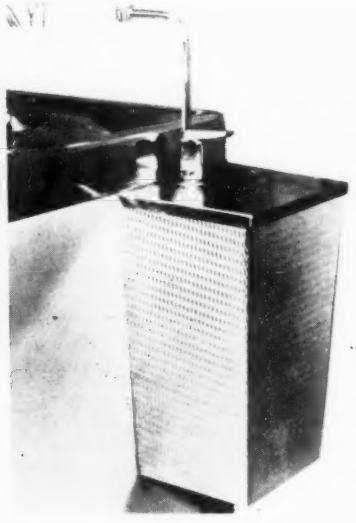
For further information, use Readers' Inquiry Coupon on page 88.

A Monthly Feature

Tools of the Office

Water Coolers

by Robert Beeman



With a trend now underway to "bring the coffee break indoors," a number of manufacturers provide units which dispense hot, as well as cooled water. Top: Canaday's new "Servit-Hot" attachment enables standard coolers to give hot water; Bottom: A supply unit from Ebco.

ONE OF THE MAIN points of contrast between a typical 1958 office and a typical office of twenty years ago is the greater provision made today for the comfort of the office workers.

It may be arguable to what degree this trend is attributable to increased consideration for the workers. To some extent at least, management has introduced some of the so-called "creature comforts" for purely business reasons. They help bring in workers when workers are hard to get. They make life more pleasant for these workers and thereby make it possible for them to do more and better work.

Many of the features of today's offices have been sold for their economic value. Whatever one may think of this motivation (and, to be fair, one must give credit to those companies that do have a genuine interest in their people), there are certain very obvious benefits to the company that makes it possible for its workers to perform efficiently.

For this reason, most important new offices are air conditioned. They are provided with comfortable lounge and restaurant facilities. Attention is given to good lighting and to making the work areas quieter through acoustical treatment. Color is used to make the spaces attractive. In some cases background music is provided at suitable times.

In this general scheme the water cooler has its own contribution to make. It is no longer sufficient merely to meet health needs by making a supply of drinking water available. The water must be cooled. It must flow from bubblers or faucets that are self-regulated so that changes in water pressure will not affect the stream. The units must be attractive to look at. And—one of the interesting trends of the last two years—to be really up to date it must dispense not just cool water, but *hot* water as well.

From the way it is being argued, this new capacity was defensive in origin. Companies simply gave up trying to outlaw the coffee break. It was too popular. So their efforts turned to controlling it. The argument is simple: Bring the coffee break indoors—let the employees refresh themselves in the office. At least the company saves the time spent running out to a coffee shop.

The availability of instant beverages offered a solution, for all that was needed was a supply of hot water. A water cooler may seem like an odd place to go to get hot water, but it had certain advantages. It was a source of water that could be used for drinking. If the office happened to be in a locality where the municipal water supply was less than ideal for drinking, this was naturally a real advantage. The cooler was, moreover, located conveniently. The worker did not need to run to the kitchen or the wash room for water. And while a drinking foun-

tain set into a wall might do as well for simple water supply purposes, it could not be readily adapted for heating the water. The water cooler, however, offered this possibility.

Most of the larger manufacturers of water coolers have responded to this situation by equipping some of their units with heating facilities. The unit that dispenses both hot and cold water is coming to be a familiar thing. In addition, special accessory units are now on the market which can be added to existing coolers so that they too can spout hot water.

Thus the water cooler with the split personality has become a real attraction. Long a meeting place for workers seeking to kill thirst—or to take a break from their routines—it is now a refreshment center as well. Fitted out with supplies of instant drinks and soups, it has indeed brought the coffee break indoors. And its popularity has been enormous.

The basic unit, however, is still a device for chilling water. Most modern units employ an electric refrigeration system which is much like that used in an electric refrigerator—or, for that matter, an air conditioner. The heat taken from the water is removed either by passing it into a flow of running water or into a stream of air blown over the coils.

Water-cooled units are more trouble to install, because they must be fitted to a water connection, but they can be located in recessed spots, since they do not have to be exposed to a large flow of air. Air-cooled units, conversely, need a supply of air that is not too hot, too dusty, or containing combustible vapors, and they must be installed so that the air can flow freely through and around them. But they are more easily installed.

Some equipment is designed to be placed centrally, the chilled water being distributed by pipe to various drinking fountains. This equipment, however, is more complicated than the standard water coolers being discussed in this section.

While electric refrigeration is popular, however, there is still a considerable market for ice-cooled units. These models, which are less expensive, use a supply of ice in the same way ice is used in a home ice-box. The only real problem here is in supplying the ice (which can be inconvenient) and in providing for draining off the melted ice.

The supply of water may also be a problem. In areas where the city water supply is suitable for drinking, the

Here are some of the many new units designed to serve as employee "beverage centers." All of these provide both hot and cold water; Some have refrigerated storage compartments. Clockwise: (1) A bottle-type unit, from General Electric; (2) a Kelvinator pressure type unit, from Ebco; (3) an Oasis unit with storage and ice-cube compartment, also from Ebco; (4) Sunroe's new "Cool-R-Frig," with refrigerated compartment; (5) Coolstream's bottle type unit with bottle compartment.

cooler may be connected directly to that supply. The water flows into it and is cooled immediately. Units of this design are said to be of the "pressure type."

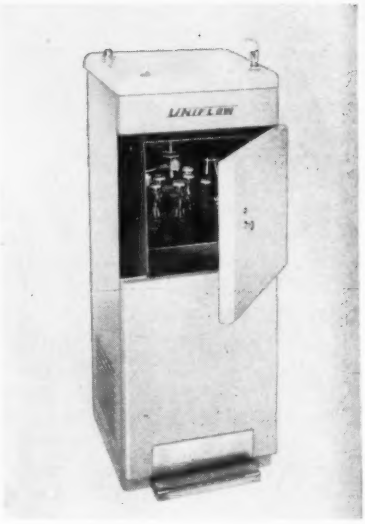
If, however, it is desired not to attach a cooler directly to a water supply source, the water supply may be brought to it in large bottles which are mounted upside down on top of the unit. Such units (logically enough) are referred to as being of the "bottle type."

Bottle-type units are not as convenient to service, because the supply of water must be replenished from time to time. However, they are very useful if plumbing connections are difficult to make, or if the conventional water supply is not suited for drinking. Moreover, a unit of this type may not be considered "attached" to a building in the way that a pressure-type model is. This may have some bearing (depending on one's lease) on whether or not the company can take a cooler with it when it moves.

A number of suggestions have been made on how best to locate water coolers. In general, it is not felt that more than one hundred persons can use the same cooler in an hour without crowding. This limitation is not imposed by the limits of the supply of cool water, but rather by the pattern of traffic flow to the cooler. If one hundred workers are to be served, it is usually better to have two smaller coolers, rather than one large one. (Some units, of course, have two bubblers or glass fillers, which may solve the problem.)

To avoid unnecessary interference with office work, it is also recommended that coolers be placed so that no employee need walk more than fifty feet to get to it. Again it is usually found better in most offices to use several small coolers, well distributed, than to install one large one. Savings in work time usually more than make up the difference in initial cost.

Naturally, coolers should be located where persons using them will not block the flow of traffic. If the cooler is of the "hot-and-cold" type, even greater provision must be made for space to accommodate those who will gather around it. Not only will there be more "customers," but usually there will have to be space for one or more dispensing units for packages of in-



The fact that more than 1,000,000 bottle or pressure type drinking water coolers are in use today attests to their popularity and usefulness. The accompanying pictures show two of the many varieties supplied by manufacturers. Both have refrigerated storage compartments. Top: A pressure type cooler with foot control; Bottom: An electrically-refrigerated bottle type cooler *(Pictures by courtesy of Uniflow and Remcor, respectively.)*

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stant coffee, cocoa, tea, or soup.

Sometimes other provisions must be taken into account. In areas where explosive or combustible vapors may be found in the air, the water cooler, if of the electrical type, must be "explosion proofed." This means, in essence, that all wiring and parts that might produce sparks are suitably insulated against contact with the air.

For users who like to drink from glasses or cups, rather than from a bubbler, coolers may be fitted with glass fillers. Some of these are operated by push button, while others operate by pushing the glass either against an appropriately shaped lever mechanism or down against a platform-type lever arrangement.

For locations frequented by children, some units have bubblers placed at a height lower than those on standard models. And, to meet other needs, water flow may be controlled, depending on the unit, by hand control or by foot pedal.

In addition to its increased versatility, the water cooler is also offering increased esthetic merit. Like almost every other piece of office equipment today, it is now offered in a variety of colors and in designs intended to please the eye.

With all of its new features and special appeals, the water cooler has not lost its basic purpose. It is even more efficient than formerly in performing its basic function. But to this it has added a repertory of delightful and useful tricks. It is no longer just a thirst-quenching station; it serves as well in the part of a dispenser of refreshment, a center for coffee break companionship, and a builder of improved morale. It thus makes a very useful contribution to the purposes of the office.

Listed below are the major manufacturers of water coolers for office use, together with a brief description of the types of products they offer.

Allen Filter Co., 25 S. St. Clair St., Toledo, Ohio. While information on current products was not available at press time, Allen has offered a line of pressure-type models of the ice-cooled variety.

Canaday Cooler Co., Inc., 118 E. 27 St., New York 16. Canaday is offering the new Servit-Hot attachment which

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enables standard water coolers to supply hot water for instant beverages. The unit plugs into standard AC or DC electrical outlets. It is thermostatically controlled and has a rated capacity of 60 to 80 cups an hour at a temperature of 185°. It can be attached to a water cooler or mounted over a sink. Price: $59.50.

Century Brass Works, Inc., 1100 North Illinois St., Belleville, Ill. The Century-Larco line includes 39 models. Two are of the bottle type, the remainder of the pressure type. Refrigeration is electric. Capacities range from 2½ to 200 gallons per hour. Standard features include bubbler with automatic volume control, foot pedal and push button control, and thermostat. Two models are equipped to make ice cubes; storage compartments for beverages are also provided. Several low-height models are available. Also offered are cafeteria coolers and centralized water cooling systems with remote water chillers. The line also includes explosion-proof models. Prices: from $220. The company also offers five ice-cooled models, with ice capacities from 50 to 150 pounds.

Coolstream Corp., Philmont, N. Y. Coolstream offers six bottle-type and eight pressure-type coolers in capacities from 2 to 20 gallons per hour. Refrigeration is electric. Four models have storage compartments for beverages and can make ice cubes. Five units have the capacity to provide hot water for instant beverages. Optional features include several types of glass fillers, foot pedal control, and hand bubbler.

Copeland Refrigeration Corp., Sidney, Ohio. The Copeland line includes one bottle-type and seven pressure-type coolers with electric refrigeration. Capacities range from 6 to 23 gallons per hour. Standard features include bubbler, hand and foot control, and thermostat. Optional are push-down and push-back glass fillers.

Cordley & Hayes, 443 Fourth Ave., New York 16. Five Cordley models are of the bottle type, eleven are of the pressure type. Refrigeration is electric. Capacities range from 2.1 to 27 gallons per hour. Six models have both hand and foot control, five have hand control only. Three models have beverage storage compartments and can make ice cubes. Two can provide hot water for instant beverages. Price range: $166 to $483, list. Also offered is one bottle-type ice-cooled model with a capacity of one-half gallon per hour; it is priced at $40, list.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 88.

Du Bois Engineering & Mfg. Corp., 2600 169 St., Hammond, Ind. Du Bois makes one large industrial-type unit with a capacity of 30 gallons per hour. It has two bubblers with hand control as standard equipment. Optional features include glass filler, bucket filler, and foot pedal control. Prices: $840 to $985.

The Ebco Mfg. Co., 265 N. Hamilton Rd., Columbus 13, Ohio. Ebco offers both the Oasis and Kelvinator lines. Each contains six bottle-type and nine pressure-type units. Refrigeration is electric. Capacities range from two to twenty gallons per hour. Standard features include Dial-A-Drink bubbler with self-contained pressure regulator, hand control, and glass filler connection. Optional are push-down, push-back, and push button glass fillers, foot pedal control, juvenile side fountain, and (in one model) wheel for portability. Four models feature a refrigerated storage compartment, and three of these have facilities for making ice cubes. Four models can provide hot water for instant beverages. Price range: $158.50 to $423, list.

Frigidaire Div., General Motors Corp., 300 Taylor St., Dayton 1, Ohio. The Frigidaire line includes bottle-type and pressure-type units. Capacities range from 2.6 to 18 gallons per hour. Refrigeration is electric. Features available, depending on the model, include hand and foot pedal controls, glass filler, self-adjusting bubbler, and frost-proofing system. Some models have refrigerated storage compartment with

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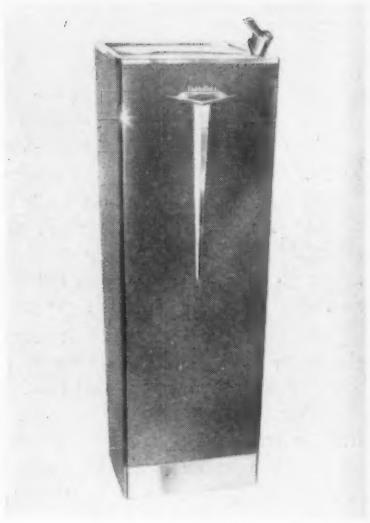

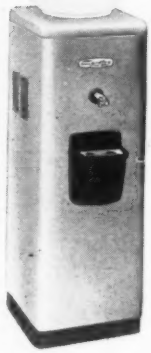

Two standard types of water cooling units for use in offices, and one designed for industrial purposes, emphasize the various styling offered. Top: The pressure type with push down button control; Center: Bottle type with faucet located on the front; Bottom: Large, heavy-duty unit with dual faucets on top, another on side. *(Pictures by courtesy of Puro, Cordley & Hayes, and Du Bois, respectively.)*

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General Electric Co., 5 Lawrence St., Bloomfield, N. J. General Electric offers a line including five bottle-type and nine pressure-type units. Capacities range from 1.5 to 21.5 gallons per hour. Refrigeration is electric. Standard features include foot pedal control, adjustable automatic stream regulator, and adjustable temperature control. Also available are push-button or push-down glass fillers, manual bubbler control, and accessory drinking fountain units. Three models have refrigerated storage compartments; two provide ice-making facilities. Three units can furnish hot water for instant beverages. Price range: $150 to $350.

The Glenwood-Inglewood Co., Glenwood Ave. at Thomas, Minneapolis 5. The Glenwood line contains three models of the bottle-type, with electric refrigeration. Cooling capacities range from three to five gallons per hour. One model has facilities for providing hot water for instant beverages. Features available include thermostat, push button faucet, and cup dispenser. The smallest model is designed to fit on a desk, counter, stand, or table. Price range: $159 to $265 list.

Haws Drinking Faucet Co., Fourth and Page Sts., Berkeley 10, *Calif.* The Haws line consists of two bottle-type and eight pressure-type units. Refrigeration is electric. Cooling capacities range from three to fifty gallons per hour. Available features include bubblers with hand and foot control, thermostat, and glass fillers of various types. Two models have refrigerated storage facilities together with ice freezing units. One ice-cooled model is also available.

Kelvinator Div., American Motors Corp., 14250 Plymouth Rd., Detroit 32. (See the listing of the Kelvinator line under *The Ebco Mfg. Co.*)

Heat Exchangers Inc., 2003 W. Fulton St., Chicago 12. The Koldwave line includes two bottle-type models with capacities of 2.2 and 5.5 gallons per hour. Refrigeration is electric.

Larco, Inc., 2409 San Fernando Rd., Los Angeles 65. Larco offers a line of two bottle-type and 41 pressure-type water coolers with electric refrigeration, in cooling capacities ranging from three to 300 gallons per hour. Standard features include bubble, hand control, and thermostat. Optional features

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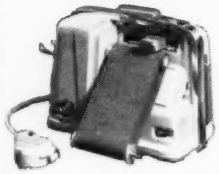

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include glass filler or push-back or lever handle-type and foot pedal control. Two models have refrigerated storage compartments, together with ice-freezing units. Price range: $240 to $3,750.

Marquette Appliances, Inc., 307 E. Hennepin Ave., Minneapolis 14. The Marquette line includes one bottle-type and four pressure-type units. Refrigeration is electric. Cooling capacities range from two to 22.6 gallons per hour. Standard features include bubbler, hand and foot control, and dual thermostat. Optionally available are glass fillers of push button, push-down, or platform types, and pitcher filler.

Progress Refrigerator Co., 737 S. Thirteenth St., Louisville, Ky. The Progress line includes a number of ice cooled models. Current details were not available at press time.

Puro Filter Corp. of America, 51 Ave. and 21 St., Long Island City 1, *N. Y.* Puro offers five bottle-type and nineteen pressure-type models. Refrigeration is electric. Cooling capacities range from two to 25 gallons per hour. Bubbler and faucet are standard features. Optional features include glass filler of lever handle-type, and foot pedal control. Nine models have refrigerated storage compartments, including five with ice making facilities. Six models can provide hot water for instant beverages. Price range: $175 to $360.

Remcor Products Co., 321 E. Grand Ave., Chicago 11. Remcor offers four models two of the bottle-type, two of the pressure-type. Refrigeration is electric. Cooling capacities range from two to twelve gallons per hour. Standard features include bubbler, provision for glass filler, thermostat, and hand control. Optional features include glass filler of push-back or lever handle type. One model has a refrigerated storage compartment. Price range: $110 to $199.

Solupak Co., 1602 Glenwood Ave., Minneapolis 5. Solupak produces a hot water dispenser such as may be

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used for instant beverages. It has an immersion-type heating element with thermostatic control. The unit plugs into standard electrical outlets.

Star Metal Mfg. Co., Inc., Trenton Ave. and Ann St., Philadelphia 34. The Star line includes a number of pressure-type units with electric refrigeration. Standard features include push-back faucets, bubbler, pedestal faucets, etc. Optionally available are side turn faucets, storage shelves, and other accessories.

Sunroc Corp., Glen Riddle, Pa. Sunroc offers nine basic lines containing 155 models. Four lines consist of bottle-type units, five are composed of pressure-type models. Cooling capacities range from three to 42 gallons per hour. Six models have refrigerated storage compartments; ice-making facilities are provided. Refrigeration is electric. Features available include foot pedal and hand controls, refrigerated storage compartment, ice-making facilities, adjustable thermostat, and various types of glass fillers. Six models are equipped to provide hot water for instant beverages. Price range: $162 to $1,245.

The Halsey W. Taylor Co., 137 North St., N. W., Warren, Ohio. This company's line contains one bottle-type and seventeen pressure-type models. Refrigeration is electric. Among the features available are dual control units, thermostat, push-back or lever-handle glass fillers. Cooling capacities range from 7 to 21 gallons per hour. One model has a storage compartment.

Temprite Products Corp., P. O. Box 72, Birmingham, Mich. The Temprite line contains a variety of bottle-type and pressure-type units. Dual water control and thermostat control are used. Optional features include glass and pitcher fillers, refrigerated storage

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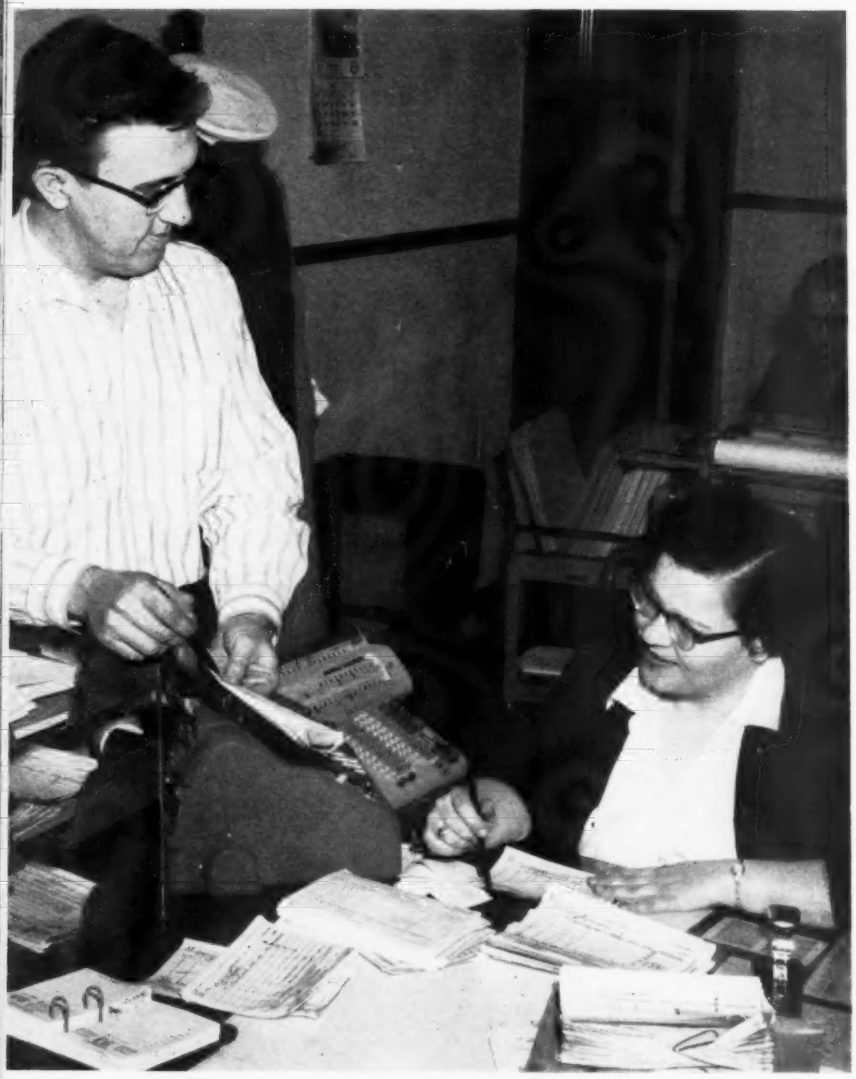
Use Readers' Inquiry Coupon on page 88

How one small office made its work measurement program work

Naval Air Station, facing problem of setting up work measurement program without overloading supervisory personnel, found solution in letting workers collect basic data—



Basis of the program is individual worker's tally of accomplishment

INAUGURATING a work measurement program is like reading the 100 Great Books: everyone approves of the principle; the question is when and how to find time to do it.

That at least is the problem in most small offices which believe work measurement would pay benefits but which do not yet have a program. The benefits can be accepted on faith; the question is whether the problems involved in administering work measurement might outweigh its values in determining employee efficiency, and as a guide to proper staffing levels.

And this was exactly the dilemma faced by the Naval Air Station in Minneapolis, which was small enough so that any work measurement program instituted would have to be carried by workers in addition to already existing responsibilities. The situation, however, was not a matter of choice with the Naval installation; it had been directed by the Bureau of Aeronautics, Navy Department, to establish work measurement. So the Minneapolis installation's aim was to devise a program which would meet the Navy's requirements in every way, and still justify itself completely in terms of current staff and work load in Minneapolis.

Naval officers administering the station first broke the entire concept of work measurement down into three main areas, each of which was to be attacked separately: the collection, the compilation, and then the analysis of the work measurement data.

Keystone of the program they devised was the collection of the work units and productive man-hours applicable in each of the "management areas" of the office. For, they reasoned, unless management can assure itself that these data are accurate, it cannot trust fully any analysis based on these data, or make any firm decisions as a result of the analysis.

With this as their first premise, the officers in charge of office activities pre-

Lt. (j.g.) J. W. Smady (rt.) explains to Cmdr. W. Gerber, supply and fiscal officer for the station, trends represented in graphic form on work measurement charts

pared a local form on which each supervisor could keep a daily tally of the work units and "productive" and "non-productive" hours for each measurement area within his sphere of responsibility. These daily records were to be totaled monthly, and then turned in to the administrative assistant for reconciliation and posting to a monthly recap work sheet.

Quality standards were to be maintained by periodic spot checks of the accuracy of the units processed in each management area.

The human factor was not overlooked in planning the program. Since workers were to be responsible for keeping their own tallies of work accomplished, they had to be "sold" on the program, not as something imposed in addition to their regular duties, but as an integral part of their regular duties. Thus, for example, a daily count of receipt documents became as much a part of a receiving clerk's routine work as the opening of parcels, or the sorting of incoming material.

By making each worker responsible for his own work unit and man-hour counts, the administrative burden was kept within reasonable limits. Supervisors entered the total figures for each measurement area under their supervision on their daily tally sheets from the workers' records. The monthly recap work sheet, prepared by the administrative assistant from the information furnished by the supervisors, balanced actual man-hours turned in by each supervisor against total man-hours for which he was responsible. Spot checks of the daily work counts in each measurement area insured the accuracy of individual workers' reports of work units accomplished. Simple comparison by the supervisors of the totals turned in by their workers, once the accuracy of these totals had been assured, gave an immediate indication of relative effectiveness of individual workers, permit-

(*To page* 84)

Spot check of workers' daily counts of work units accomplished insures accuracy of individual reports

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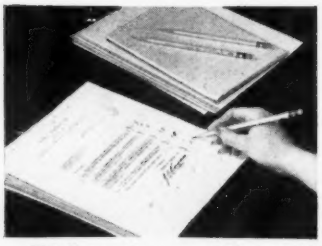

2 Letters can be composed of any combination of numbered paragraphs which are recorded on Auto-typist record "memory" roll.

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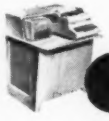

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compartment, and ice-making facilities.

Uniflow Mfg. Co., East Lake Rd., Erie, Pa. Uniflow offers two bottle-type and eight pressure-type models. Refrigeration is electric. Cooling capacities range from five to fifteen gallons per hour. Foot pedal is standard. Glass filler and hand bubbler are available optionally. Three models have refrigerated storage compartments. Price range: $220 to $347.

Waters Filter & Cooler Co., 10 W. 29 St., New York. The Waters line includes a number of electrically refrigerated models in a wide range of cooling capacities. Features available include bubbler, hand and foot control units, refrigerated storage compartment, and ice-making facilities. Several models can provide hot water for instant beverages.

Westinghouse Electric Corp., Appliance Div., 1100 Page Blvd., Springfield, Mass. Westinghouse offers a line of bottle-type and pressure-type units. Refrigeration is electric. A wide range of cooling capacities is available. Available features include automatic stream height control, glass fillers, auxiliary fountains for wall or side mounting, refrigerated storage compartment, ice-making facilities, and provisions for supplying hot water for instant beverages.

Readers wishing further information from manufacturers of products listed in the Tools of the Office section may use the Readers' Inquiry Coupon on page 88.

Forms—

(*From page 35*)

5. Perhaps on the surface, this situation does not appear very serious. Neverthless, everyone appears to be conscious of the national effort to reduce waste and inefficiency; and so every suggestion, no matter how inconsequential by itself, could have dynamically greater affect if considered on a wide enough scale.

If this should appear complicated to some persons, then it remains for someone to take the time to outline the several hundred different forms currently in use today, which all have the same basic function; and then arrive at a more simple solution than the one being proposed.

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Promotion—

(*From page* 43)

selection of outside candidates, to provide a continuing influx of high quality personnel that a completely rigid promotion-from-within policy might prevent. Every office profits by acquiring new people, from time to time, with fresh points of view. But it is also important, therefore, to have sufficient leeway in the promotion program for the exercise of administrative judgment in recruiting from outside.

One of the advantages that accrue to an office from a good promotion program is the interest that ambitious employees develop in preparing themselves to assume greater responsibility.

The administrator should be prepared at all times to inform present office employees of available means by which they can improve themselves and so broaden their qualifications for promotion. Doing this helps to avoid making commitments or arousing hopes for promotion that cannot be fulfilled by incompetent personnel.

Before the office administrator can advise employees or plan training effectively, he will need information on the probable personnel needs. He will need to answer such questions as: Is the office function changing or likely to change soon? If so, what changes will there be in the type of personnel skills needed for office work? Is the office likely to expand or contract in the next few years? In what particular functions? What are our present skills resources? What are the labor market conditions affecting the kind of workers we employ? Will automation increase in use in the office? If so, what type of trained workers must we have to meet the problem?

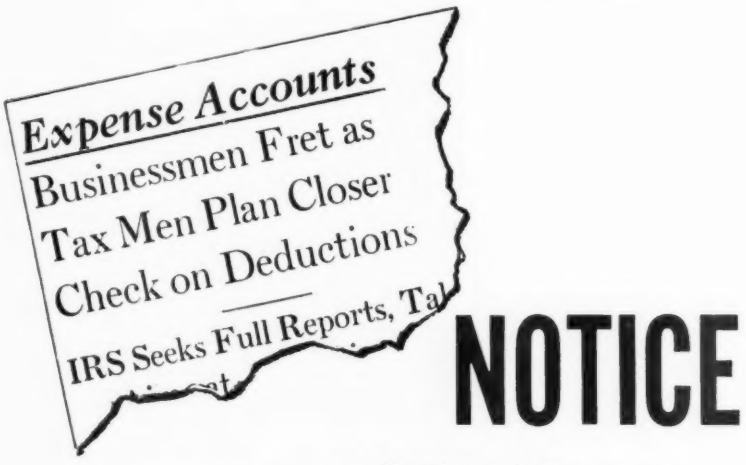
Of course, to be most efficient, office promotion activities should be related to a training program in order to determine those eligible to positions on a "promotion ladder."

Office employees selected for promotion should meet at least the minimum qualification standards or their equivalent for positions for which your company has issued standards. Selection of employees for promotion is often more effective if, in addition to the minimum standards, specific qualifications demanded by each office position to be filled are determined and listed to guide the final selection. Requirements may be set spuriously high, such as requiring a college diploma unnecessarily, or unrealistically low, as by omitting a crucial skill and work experience.

Determining suitable qualification requirements is your first step in applying them equitably to all candidates. They should be used for the purpose of screening those whose qualifications meet office standards from those who do not qualify under them.

Some offices have found that announcing vacancies is a satisfactory way of bringing qualified employees up for promotion consideration. If office employees are selected for preliminary consideration by a review of their qualifications on file, some sort of skills file is necessary. One large office with a number of jobs uses a skills code of this kind. The employee's service record card is marked at the bottom edge with visible colored signals and code numbers denoting his skills and training.

No mechanical system or other coding device can take into account all variables. To give adequate attention to these special qualities, such as personality, for example, the office administrator cannot merely press a key; he must rely on his own good judgment, diligent observation, and perhaps well-kept notes, and, most of all, on his



NOTICE

to all Traveletter users . . .

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To all users of The *Traveletter* System for handling sales and travel expenses, *Traveletter* is issuing (at no added expense) expense forms* in duplicate (with carbons).

The use of these forms will solve many problems for your accounting department and give each salesman and traveler a duplicate of his expense report . . . which he will need in making his income tax return. The new Income Tax ruling will require each salesman to file a report of reimbursed expenses starting March, 1959, which means that he must start *now*, in 1958, to keep a record of these reimbursed expenses.

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Perhaps the use of The *Traveletter* System for reimbursing your sales and traveling personnel can help ease the situation for you . . . as it has for hundreds of other companies. A descriptive brochure will be sent on request.

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continuous contacts with employees being considered for promotion.

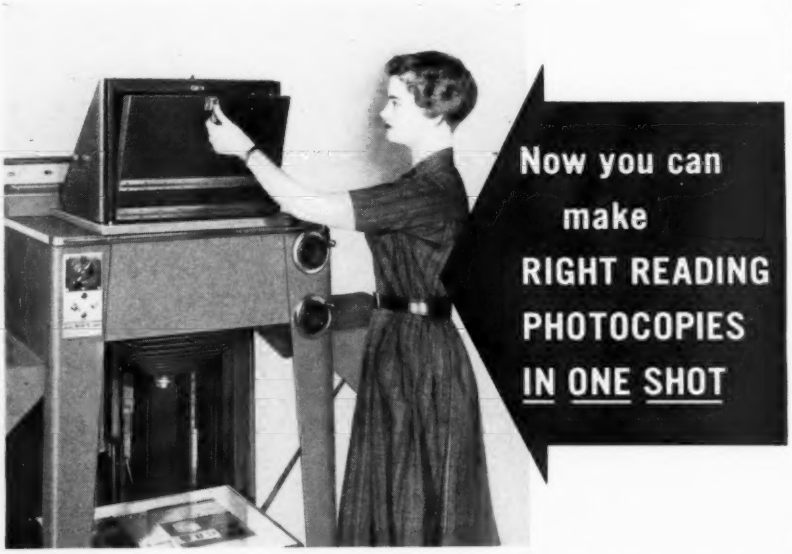
While methods of selecting and evaluating office employees for promotion may vary, it seems essential that the same qualification standards be applied uniformly to all employees who meet the minimum requirements.

A promotion for a stenographic services group in an office is designed to select clerical, typing, and stenographic employees for detail to staff offices and for promotion to clerical supervisory positions. The evaluation might include the following: Personality, clerical ability, clerical experience, knowledge of stenography, leadership qualifications, personal appearance, education, and, of course, experience.

One important procedure involved is to make a record of all office employees who are considered for promotion. Employees should be encouraged to realize that they are not being overlooked and that promotion in your office is an actual program in effect for qualified workers.

Finally, the question arises: Is the office placement right? No matter how carefully the selection was made, the only sure way for the office administrator to know how effective the employee is in the promotion or job is to check on his performance periodically. If the employee is not satisfactory, even after training and other assistance, he should be returned to his former position or transferred to one in which he will be competent.

A sound office promotion program that will enable competent employees to advance as vacancies occur is one of the basic essentials of eliminating personnel turnover and of increasing efficiency, morale, and interest in jobs.

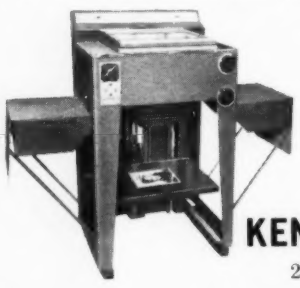


NEW Kenro Prismatic Head makes right reading reproduction quality prints to any size

The new Prismatic Head fits in the recess on top of the Kenro "Vertical 18" camera interchangeably with the Standard Head used for making offset negatives or the Xerographic Head for making xerographic exposures. The Prismatic Head reverses the image thus producing right-reading exposures on photosensitive paper or film, up to 12" x 18" in size. It permits one-step production of sharp, right-reading copy in either positive or negative form enlarged up to four times or reduced to half size.

Without need for making an intermediate negative you can rapidly produce direct photocopies (black type on white background) of correspondence, low-cost "stats" for advertising needs, enlargements to required size of photocomposition, proofs of paste-ups or copies of engineering drawings, etc. You can also make one-step right reading negative copies (white type on black background).

Goerz lens, strong even light, precision controls and automatic exposure timer assure uniform high quality and accurate sizing on every shot. You do not need to be a professional cameraman to operate a Kenro. Complete instruction manual shows how anyone can easily make line and halftone negatives, xerographic exposures and one-step photocopies.



For complete information write for Bulletins 56 and 258.

KENRO GRAPHICS, INC. Dept. K-3

25 Commerce St. Chatham, New Jersey

Insurance—

(*From page 27*)

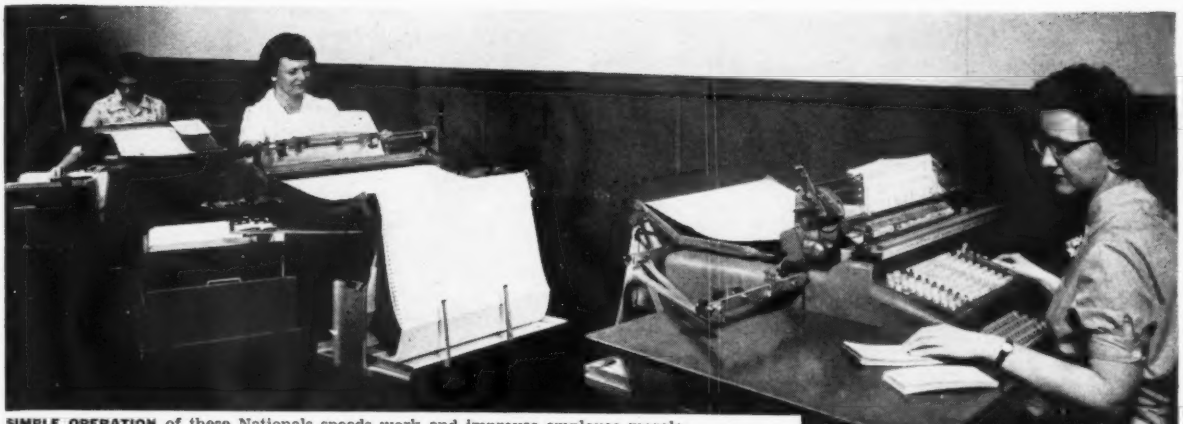
used to purchase annuities at the time of the worker's retirement. Under pension trusts, the employer simply sets up a trust into which regular deposits are made to secure retirement income for each covered employee. The deposited funds are invested in income producing bonds and securities at the discretion of the trustee.

Here a very definite trend is showing in favor of pension trusts over the various types of annuity contracts offered by insurance companies. There are various reasons for this, but perhaps the most important is the limitation put on insurance companies as to the amount which they can invest in common stocks. Legally, insurance companies are rigidly limited in their investment opportunities. This protects their funds in event of a downturn, but make it difficult for them to expand their funds rapidly in a period of inflation.

A trusteed plan can spread its funds more equally over a range of common stocks, as well as bonds and other holdings, and is thus more sensitive to general business conditions.

What difference does it make in terms of pension payments, most of which are stated amounts anyway?

It means two things. Many companies set up yearly retirement income in terms of a percentage of the yearly income of the employee during a certain period of his career with the company. Obviously a trusteed plan, which has a large share of its funds in stocks responsive to general business conditions, offers advantages to the company in that more funds will be available for pension payments during a period of inflation when closing year salaries are apt to be high. By the same token,



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INCREASED ACCURACY and more efficient accounting are valuable features of this National Accounting Machine.

JOHN J. SINDER, Controller of the Electro Motive Mfg. Co., Inc.

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saves us $10,680 a year...

pays for itself every 14 months!"—**Electro Motive Mfg. Co., Inc.**
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"Business expansion creates accounting problems, but we were able to solve ours with the installation of a National System," writes John J. Sinder, Controller of the Electro Motive Mfg. Co., Inc. "The replacement of costly manual bookkeeping with automatic Nationals has resulted in fewer errors and misunderstandings, thereby increasing savings for us!

"We use Nationals primarily for Payroll accounting. These machines are responsible for substantial reductions in bookkeeping costs and supply us with a clear financial picture of our operation. The National System was easy to introduce to our employees, and we feel that its ease of operation was a prime factor in maintaining good employee morale.

"In terms of overall savings and control, our National System saves us $10,680 a year, pays for itself every 14 months."

John Pender

Controller of the Electro Motive Mfg. Co., Inc.

Your company, too, can benefit from the time- and money-saving features of a National System. Nationals pay for themselves quickly through savings, then continue to return a regular profit to you. For complete information, call your nearby National representative today. You'll find him listed in the yellow pages of your phone book.

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Use Readers' Inquiry Coupon on Page 88

while a trusteed plan may suffer some drop in value during periods of deflation as compared with an insured plan, salaries for employees nearing retirement during such a period will probably not be as high as they would in a period of deflation. The trusteed plan, since it is more responsive to basic business conditions, in other words, is more apt to furnish a retirement income in line with the cost of living at the time the employee retires, than is the insured type of plan.

An even more direct tie to the cost of living index is furnished by "variable" pensions—pension plans under which the retired employee holds a certain number of shares of the company's common retirement fund, and receives varying dollar payments determined by the current values and earnings of those shares. Under a variable plan, his income is not fixed at a certain dollar level, but the income does, if the pension funds have been invested wisely, adjust almost automatically to the current cost of living. Variable plans at present are possible only through pension trusts, and one or two very small local insurance companies; state insurance laws prevent the great majority of major insurance companies from offering them, although many leading companies are attempting to have the laws changed to allow them to establish and sell variable pension plans.

But all these trends have been based on a period of inflation, during which both the cost of living and values of common stock investments were rising. Whether there will be an end to the drift of pension funds from insured plans to trusts, if we are in for a prolonged period of deflation, is problematical. Obviously, in a period of deflation, insured plans would offer advantages to both employer and employee. It seems very probable that, for the time being at least, those companies which do have pension plans set up under an insured arrangement, will take their time about switching to a pension trust.

What about the company which has no pension plan at present but has been planning to establish one? Deferred profit sharing could well be its best answer in a time of business uncertainty about the future. Profit sharing plans offer many advantages, particularly to the small company, or the company which is in a highly cyclical business, where profits may be very good one year, very low the next, even in a time of relative business stability. While profit sharing plans once set up are just as irrevocable as a pension plan, they do offer certain advantages in terms of the company's financial picture. First and most obvious, if the company does not earn a profit, it is under no obligation to make a fixed deposit in the fund, as it is in any type of funded pension plan. Thus, its commitments, though fixed in terms of a certain percentage of net profit that must be deposited every year, are not fixed in terms of a certain specified number of dollars that must be deposited each year. In years of low profit, correspondingly less money needs to be placed in the fund; in years when there is no profit at all, the company is under no obligation to deposit anything in the fund.

Deferred profit sharing funds are always handled as a trust, and thus may be invested through a wide range of securities. Thus, the amount credited to each employee is subject to two variations: the relative prosperity or difficulties of the company itself, and the changes in value of the portfolio of securities held by the trust. No fixed amount is guaranteed the employee on

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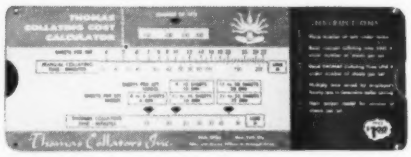

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. . . with our new Ozalid Order-Writing and Invoice System"

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LET ME SHOW YOU SOMETHING . . .
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Clary introduces new computing system; Western Union inaugurates IDP operation

Figures are entered into Clary's new ECS through special keyboard; computations are performed by electronic unit stored in the desk

Operator watches as common language perforated tape is automatically turned into punched cards at Western Union's IDP center in New York

A NEW Electronic Computation System (ECS) to fill the gap between large-scale electronic "brains" and mechanical calculators has been introduced by the Clary Corporation, San Gabriel, Calif.

Called the Clary ECS, the multipurpose computation machine performs many of the functions of the more complicated computers, while offering simplicity of operation. The completely transistorized unit, built into a standard office desk to conserve space, is priced at $15,000 F.O.B. San Gabriel. It can be operated from any ordinary 110-volt outlet.

Many of the common repetitive problems of business, such as payroll computation, billing, production control, interest computation, marketing research, loan formulas and insurance rates, can be programmed into the ECS in a matter of minutes by office personnel, President Hugh L. Clary stated recently. "This compares with the days and weeks required for systems engineers to program such operations with the electronic giants," he added.

The company reports that "in-use" tests have shown that the ECS can compute payrolls in one-sixth of the time required with the mechanical calculator. In addition to its many commercial uses, the system will solve many scientific problems and all straight arithmetical calculations. In the latter applications, the unit functions as an electronic calculator requiring no programming and leaving undisturbed pre-set programs.

The ECS uses electronic means to perform all basic types of computations. Figures are entered into the system by a special keyboard mounted in the top of the desk. Computations are performed by an electronic unit stored in the drawer section of the desk, and results are printed automatically on an adding machine-type print unit mounted flush against the desk top.

A magnetic drum memory storage is used in developing results of a computation, storing constants or storing

(*To page* 78)

retirement; the amount he receives then will depend on how successful his company has been through the years and how wisely its profit sharing funds have been invested. On the other hand, deferred profit sharing has more incentive value for individual employees than the various fixed income plans, since each employee's retirement capital will depend to so large an extent on how well his company has done over the years.

Advantages of profit sharing

Moreover, the deferred profit sharing trust is a relatively simple fund to administer, and, especially for small groups, entails less overhead expense than do any of the fixed pension plans. In addition, the advantages of a lifetime income on retirement are not necessarily foregone if deferred profit sharing is the plan used: the lump sum due the individual on retirement can be used to purchase annuities, or alternatively, the sum credited each employee at the end of each year can be used to purchase annuities at the time, so that the employee's income at retirement age will be determined by the varying totals of annuities bought for him over the years.

Obviously, deferred profit sharing, from the employee viewpoint is fine in times of good business, rising incomes, and prices, not so good in periods of deflation, when both company profits and fund earnings are apt to drop. For this reason, many companies employ a combination of either insured plan or pension trust, and profit sharing, with pension fixed commitments relatively more modest than they would be in a pension fund without profit sharing as an accompaniment. This offers many advantages to both company and employee: it keeps the company's fixed commitments at a relatively low figure in times of low profits. From the employee viewpoint it guarantees a minimum income on retirement even though conditions are bad and have been for some time; it also is a guarantee of modest fixed income and a relatively large amount of capital if conditions have been very good for some time. In other words, profit sharing in combination with a low level pension plan can give many of the advantages offered in the variable pension plan, where monthly dollar income is more or less in accord with cost of living because of the varying dollar value of shares in the common fund. However, it is considerably easier for the small concern to manage than is a variable fund, and has the further advantage (which a variable pension plan does not), that the employer's dollar commitment is not rigid.

The whole field of medical and health protection, and provision for retirement income has become so basic a part of our business fabric that it is doubtful if any recession, however severe, can make basic changes in it. Moreover, it would be a serious social blow if it did, for the rapidly growing older age group must be assured in the future of some kind of income, and some kind of protection against medical bills. It can be provided through pre-payment during their working lives, as part of the business fabric, or it will have to be provided by some kind of subsidy, either from relatives or through government agencies, after their retirement. The healthiest solution, in every way, seems to lie in the direction business has been going—to provide through private plans security for the retirement years, over and above the low income provided by Social Security.

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Are you harried like this office manager? Are you still looking for a way to reduce complaints from management and employees? Here is how you can help keep personnel at maximum efficiency, even in crowded areas and despite increased work loads. Your office, like many others, will be a better place to work when Airkem is used to kill cigarette smoke odors and other causes of stuffy air.

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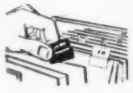

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Bank—

(*From page 30*)

count number by a successively advancing figure, drop each carry-over figure, cross-add resulting figures, and subtract the sum from the next highest multiple of 10.

As an example, let us assume we have given the account number 36482 to an account. We already have the branch office number; since the account originated at the headquarters office, we have prefixed it with the number 1. We next need to fix the digit number.

Initial step is to multiply each figure of the account number (36482) by an equal number of successively advancing figures, reading right to left. In this instance, the numbers are 6 5 4 3 2, respectively. If multiples of these figures (as, for example, 6 times 3) total more than 10, the first of these two figures is dropped. Multiplication according to regular standards would present these totals: 18 30 16 24 4. With the first figure excluded, our "revised" totals for this example become 8 0 6 4 4. These figures are added together to total 22. This sum is subtracted from 30, the next highest multiple of 10. From these computations, a digit number of 8 is assigned to the account in question. As far as the Post-Tronic numeric system is concerned, the full numerical description of the account is 1-36482-8.

Depositors' cooperation sought

A preprinted chart, indicating a wide range of possible numeric account designations, was distributed to all offices. A central "clearing house," set up at the main office, records each new account number as it is received. To insure successful operations, the bank mailed each depositor a letter, recounting the details of the proposed new accounting system and the "rules" depositors would need to follow when the system became operative.

Next step was to imprint account numbers on deposit slips and checks. From this point on customers' checks bore both their names, as previously, and new account numbers. All tellers maintain complete charts of account names and numbers. As Mr. MacDougall observes, any customer can find his correct account number by giving his name to a teller at any office. (Or, should the necessity arise, he can find his correct name by giving the teller his account number.)

The importance of account numbers to the system is obvious. A small penalty is assessed by the bank for failure to indicate account numbers on checks obtained from sources apart from the bank itself—from department stores, for example. This penalty, as the bank mentions, is not designed to increase its operating income, but rather to stress to depositors the necessity of their acquainting themselves with their account numbers.

Bookkeeping staff reduced

The five Post-Tronics were delivered late last Spring and installed in the Bookkeeping Department on August 19, 1957. Operations at full capacity began on the same day. Although their purchase price, $11,750 for each machine, represented a substantial increase over the cost of the bank's former accounting equipment, a reduction in the number of bookkeepers required to handle posting was effected. Five bookkeepers now operate the system on a 9 to 5 schedule, excepting, naturally, in periods of peak loads. Results to date, Mr. MacDougall says, indicate a long-range savings in oper-

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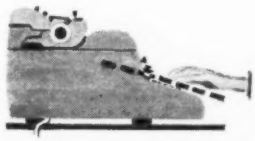

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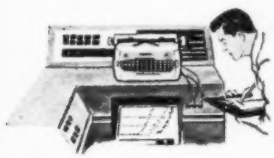

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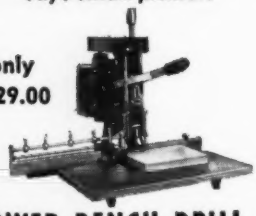

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ating costs. In addition, through automatic alignment of forms to proper posting lines, customer statements are neater in appearance, and this feature, combined with significant speed and accuracy improvements, adds up to better customer relations.

Are the Post-Tronics difficult to operate? Mr. MacDougall says no. "We've encountered no operating problems at all," he relates. "The usual operator can learn to run the machine on the first day, and can acquire necessary speed and skill in about 30 days." For this reason, he continues, operators need not enroll in any school, a procedure often required of bookkeeping-accounting staffs to gain sufficient knowledge of some types of business equipment.

Regular checking accounts next

What happens to accounts on which changes of address must be effected, or special instructions issued? Colored tabs, attached to such account ledgers, call attention to "special handling" provisions. Customer statements are mailed on a regular basis, although "filled sheets" (account ledger sheets which are posted to the ends of columns), are mailed out upon transfer of appropriate balances to the subsequent sheet. Also, persons who have changed their mailing addresses are mailed copies of their account postings up to and including the day the change was noted. As Mr. MacDougall says, this procedure not only provides a measure of "extra service" to customers, but also lets them know that their new addresses have been recorded correctly. In addition, these persons receive complete statements on the regular basis.

Since the date of installation, Mr. MacDougall adds, not a single preliminary programming step has had to be changed. In time, the bank expects to transfer its regular checking accounts to the numeric system.

As mentioned previously, NCR is promoting the Post-Tronic for two reasons: As direct help in easing current, day-to-day operations and, undoubtedly of foremost importance, as the initial step in a series of machines designed to achieve complete bank automation. Thus far, NCR notes, bank automation on a grand scale has been difficult to program. This is due to the fact that some automated systems today are predicated on use of a computer whose cost would prove prohibitive to all except the largest banks in the nation. The problem of code standardization, however, has been overcome by NCR's intention to base its system on a code compatible with the common language of magnetic characters accepted as standard for the industry by the American Bankers Association's commission on bank automation.

Obsolescence factor discounted

Another problem is obsolescence. If the Post-Tronic is designed to handle operations of a current nature, and later to be incorporated as a separate segment into an overall automated system, will its later applications negate the work processing it will conduct before the entire system is available? Since the Post-Tronic, however, is designed to act as the keystone for NCR's successive stages of automation, the company feels that obsolescence is precluded. Also, since the Post-Tronic is programmed for posting and retention of conventional, or original, records, NCR maintains that a company's normal record-keeping operations need not be disturbed. The fully-automated depositor accounting system will produce identical records.

Another problem, now on the verge of solution, is the matter of sorting

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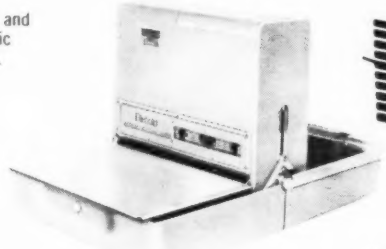

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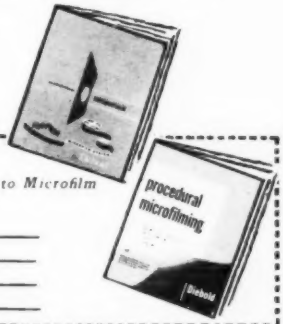

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Sturgis office chairs with fiber glass bases cost no more than most ordinary chairs. The Sturgis fiber glass base is unbelievably strong and tough. It will never need to be refinished because there is no finish to scuff off. In short, it will never wear out. When it gets dirty wipe it off with a damp cloth and it will look like new.

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checks for processing by the Post-Tronic. At The New York Trust, sorting is done by hand. This year, NCR reports, delivery of Plan Two—a magnetic character sorter—will begin. This 12-pocket sorter will be able to process documents of varying length, width and thickness, inter-mixed. The sorter will read at a rate of 1200 characters a second and recognize 14 characters, including certain digit numbers and symbols.

Additional units scheduled

In 1959, NCR expects to release a magnetic character imprinter. For attachment on any National proof machine or the newer models of National adding machines, this unit will allow for imprinting by magnetic ink of check amounts in process, and automatic transferral of these items to proper storage bins. In 1960, a lister attachment is scheduled. By combining the amount imprinting and listing of items on the sorter, all book-sorting or re-running of items, now achieved in proof, will be eliminated.

NCR continues that a punched paper tape unit, also scheduled for 1960, will be attached to the sorter. By means of this tape unit, the listing of "fine" sorted items and creation of a punched paper tape of all items in the sequentialized sort order will be handled simultaneously. For additions to existing or future Post-Tronics, this punched paper tape will serve as input to the Post-Tronic, give account number and amount, and be read by a tape reader, also available in 1960. Another device scheduled for release in two years is an automatic feeder for ledger sheets, which will feed account sheets into the Post-Tronic.

If a common language is to be truly "common" to all enterprises within a single industry, it is necessary for that industry to encourage free interchange of items between component companies. Thus, NCR feels, the benefits to be accrued from agreement among members of a given clearing house association to accept the amount encodings of each other's items will be enormous. Once this is accomplished, it will be possible to process clearing, or external items, as well as "on us," or internal, items through a primary proof machine.

Applications seen increasing

The final step in its complete electronic check automation program, NCR reports, will be the processing of transit items in a manner similar to that proposed for the clearing house method. As clearing houses accept a standard formula, amount encoding and ABA numbers in magnetic ink on the great majority of items processed will be provided. Naturally, the time required for successful implementation of this final step will depend upon the time required by clearing houses to approve use of a common language.

Obviously, then, the Post-Tronic, according to its manufacturer's outline, will enjoy a far wider application as related pieces of equipment are installed. Already, about 1,200 Post-Tronics are in use or in installation stages throughout the country. Production of the machine, as well as its successful application by such institutions as The New York Trust Company, emphasizes again the need for, and desire of, manufacturers to devise overall automated programs in connection with existing machinery.

As such widespread research and development continue, automation soon will fulfill its potential as management's most valuable tool in the office of tomorrow.

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Automation—

(*From page 70*)

results of a calculation for later use in developing further computations.

Delivery time for the Clary ECS at present is less than six months.

Western Union installs IDP

The Western Union Telegraph Company, New York, recently inaugurated a nationwide integrated data processing system, using its public message network for the automatic, high-speed transmission, by perforated tape, of the company's own multi-million dollar payrolls, equipment inventories and other statistical information.

As a result, more than a half million words and groups of figures, giving weekly detailed information concerning telegraph operations in every major city coast to-coast, will be quickly assembled at special centers for electronic processing by business machines and calculators. Transmission of the data, flashed by wire to Western Union supervisors in the field and to management officials in New York, makes possible more efficient handling of payrolls, more up-to the-minute decision-making and more efficient control of inventory and operating costs.

Network covers 17,000 miles

Western Union's IDP system, the company continues, is one of the nation's largest. It will use 17,000 miles of the public message network, and is being placed in service in two stages. The first part, now in service, links 18 control cities where a constant stream of payroll, inventory and other data is being received from Western Union offices in all states and the District of Columbia. The control cities then transmit the assembled information by wire to one of five IDP centers in New York, Atlanta, Chicago, Dallas or San Francisco. These centers, in turn, consolidate the data for transmission to management and area supervisors. Ten new control cities are to be added to the system at a later date.

In addition to producing payrolls and checks the system will provide detailed information about the availability of equipment and parts at thousands of offices, and the daily work of more than 22,000 field employees. This is how the system works:

Each hourly-rated employee uses a daily work report card, on which are entered the hours worked and code number identifying such variable information as project, kind and location of work performed and time required for completion. At the close of each day, the cards are checked, sorted and placed in sequence by employee number.

Tape data converted to cards

Control cities record this data on a wide tape. The machine simultaneously prepares a five-channel, common-language, perforated tape for telegraph transmission to the proper data processing center, where it is converted automatically to punched cards.

Other punched cards on file at the data processing center contain constant information for each employee—including name, payroll number, salary rating, Federal income tax data, payroll group and date. A machine automatically consolidates this constant data with the variable information for each employee. Completed cards then are processed through a battery of electronic calculators and other business machines which print payrolls, prepare checks and provide current management control data.

"Nonsense" totals check accuracy

One interesting feature of the operation is inclusion of a "nonsense" total, automatically produced by equipment at the control cities, with each line of figures transmitted. At the distant data processing center, a calculating machine automatically adds each line of figures received to obtain a similar "nonsense" total, thereby insuring absolute accuracy. The machine releases the data for final processing only if the two totals agree.

The perforated tape used for transmitting data over the regular telegraph network for business machine processing at destination is the same medium used in transmitting telegrams.

MEMO
Dear Gal Friday
I don't care what they say—it was love at first sight. How beautiful you are—your eyes, your hair, your form divine. Surely a perfect Secretary will make a perfect wife.
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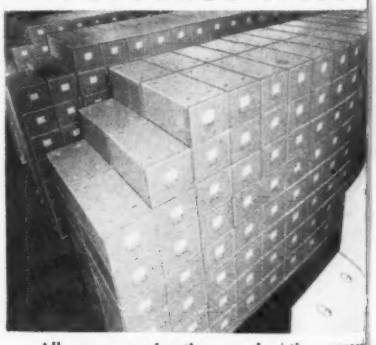

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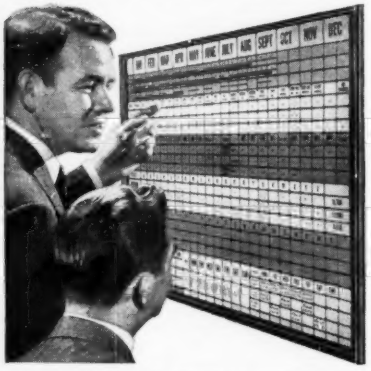

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Procedure audit—

(*From page 32*)

the manual which were never "sold." They may have come about to satisfy inadequacies pointed up by the external auditors, or they may have been railroaded through by certain individuals over the objections of others. In such circumstances, the procedures have been accepted under duress, and the people involved feel they were forced into compliance. The audit may well show up deviations from the procedure as written, where quietly, without fuss, the individual has worked out his own compromise with what was originally forced on him. The procedure audit now assumes the aspect of a "police" action, and can cause much resentment. It is up to management to make it clear to line supervision that the procedure audit is a management tool meant not as a punitive measure but as a means of improving company operations. The benefit that they themselves will accrue should be stressed, and their co operation solicited. When the systems man gives credit to the line for help and cooperation, as he must, management should acknowledge such cooperation in positive terms, thereby enhancing the audit program.

(2) The writing and installation of a procedure has an immediate and visible result. Changes take place, routine is altered, a challenge is present to improve performance, to prove one's ability under changed circumstances. In the procedure audit, however, changes are not necessarily going to occur, and—if they are—not at that time. As far as the line supervisor and employee are concerned, the audit is only something that takes away their time and attention from the work they must perform. Again, as in the previous instance, it is up to management to make its backing and support known, to impress upon the line supervisors and employees the need for constant review and re-evaluation of the company's standard procedures.

Modern management is very much aware that to stand still today is tantamount to failure. Only dynamic, progressive organizations can keep up with the requirements of competitive business and industrial conditions. With a well established procedure audit program, modern management takes one further step in assuring for itself efficient processing, useful and timely reporting, so it can make the necessary decisions in maintaining and improving its competitive position.

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Office—

(*From page 38*)

large sofa in washable off-white vinyl plastic, specially-designed console tables with Travertine tops, and lamps were added to enhance the atmosphere of comfort displayed in the entrance area. Large walnut doors lead into the companies' suite.

The reception area contains an exclusive angular sofa, covered by textured fabric in beige, greens and oranges. A caneback chair with orange seat and tables complete the grouping. Of particular interest is a mosaic table of abstract design made by Stewart Studio.

The receptionist's desk, featuring suspended pedestals and heavy glass top, was designed by Mr. Gerstel. Other furniture in this area include a white-leather desk chair, another orange-colored chair, an attractive Parzinger floor lamp, and two benches covered in white leather.

The layout provides for direct entry from the reception area into an assembly room. The latter is connected to

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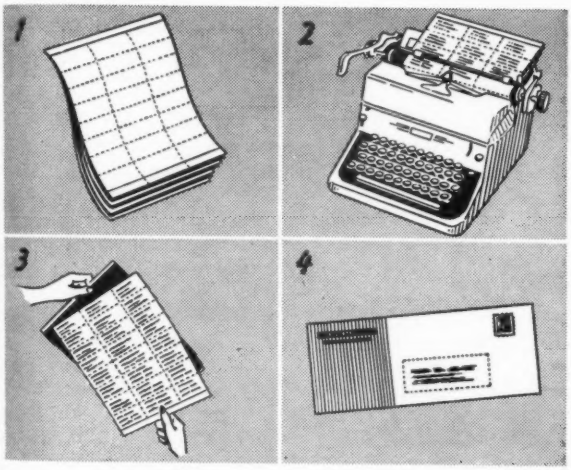

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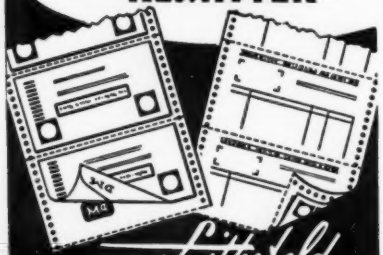

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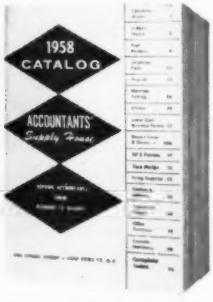

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a large board room. This arrangement permits meetings to be held without the necessity for guests to pass through other office areas. The assembly room features walls covered in two tones of vinyl plastic and a specially-woven deep pile green carpet. Modernfold doors covered in vinyl plastic enclose a large closet. Two sofas in off-white, tables, a desk, two additional chairs, two floor lamps and a built-in telephone booth for executive use complete the furnishings.

If one could segregate the single outstanding unit of the new offices which commands the most attention, the designation very possibly would be applied to the board room and environs. The board room itself, which measures 30 by 17 feet, is topped by a luminous ceiling, designed to provide equal distribution of light throughout. A rectangular lighting arrangement with dimmer affords individual regulation of intensity. The room also contains deep pile green carpeting identical to that used in the assembly room, and a simulated window effect is provided by inclusion of Fiberglas curtains, lighted from behind. One end wall slides open to reveal a blackboard, while the other side has a similar sliding-door arrangement covering a projector screen.

The specially-designed oval-shaped table is approximately 21 feet in length and has a matching veneer finish on the top. Comfortable chairs, surrounding the table, were designed and executed by Fabry Associates, Inc. Connected to the board room is an attractive dining room for the convenience of persons attending meetings and of company officials. A black and white checkerboard vinyl floor supports tables with pedestal legs and white Formica tops, and Salterini chairs with black woven plastic backs and orange seat pillows. This orange color is repeated on the wall behind the Harvey Probber buffet. Walls are paneled in Paldeo, with two sides featuring Japanese panels in narrow black frames. Connected to the dining room is a fully-equipped kitchen which, in its display of modern furnishings, complements the design pattern of the entire office area.

The majority of offices are carpeted throughout and, except for executive offices, are equipped with standard furniture from Macey-Fowler, Inc., Charles S. Nathan, Inc., and Richard Draper & Co. To avoid monotony, various types of furniture, with different color patterns in upholstery, were chosen for each office. Overall wall colors are based on a theme of light beige and cocoa to harmonize with carpeting.

The office of the board chairman is paneled throughout in walnut; furnishings include a light beige carpet, an exclusive oversized conference desk, a highback desk chair in black leather, and visitors' chairs in antiqued white leather. The sofa is covered in blue silk; the highback chair, in beige velvet. An assortment of attractive tables and lamps completes the furnishings.

A pair of doors connects this office with the informal meeting room, where a built-in wall houses complete bar and refrigerator facilities, "telescope" doors, a closet and television set with remote control. The sofa and chairs from Fabry are covered in fabrics in combinations of greens and blues. Walls are in light beige grasscloth and draperies in off-white. The chairman's secretarial office features an attractive desk in walnut oil finish, with cane back and white Formica top. This desk is attached to a supply cabinet and built-in files sprayed in white. A brass railing divides the desk area from the visitor's area.

A special "Guest Office," reserved for company officials who are quartered in California, was created to provide a bright "Hollywood" atmosphere for visitors. Draperies, for example, are a blend of specially-printed yellow and white, and the same material has been used to clothe one entire wall. Heavy pile carpeting is in a similar gold color. A chandelier enhances intimacy, and furniture is finished in black. Visitors' chairs are covered in white leather and the sofa in black-textured fabric. Attractive pictures have been selected for the walls of the room, as well as for other offices.

Office partitions are gypsum black, with both sides plastered. Ceilings are suspended, incorporating acoustical tile and recessed lighting fixtures. The efficient lighting arrangement is individualized for each office according to requirements, with light intensity increased above desk areas.

Thus, from imaginative use of color and furnishings, American Colortype's new offices have achieved a striking balance between charm of decor and functional layout. This indicates, as many executives have maintained through the years, that an office's individuality need not be lost in the transition from old quarters to new.

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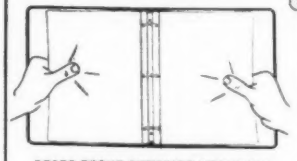

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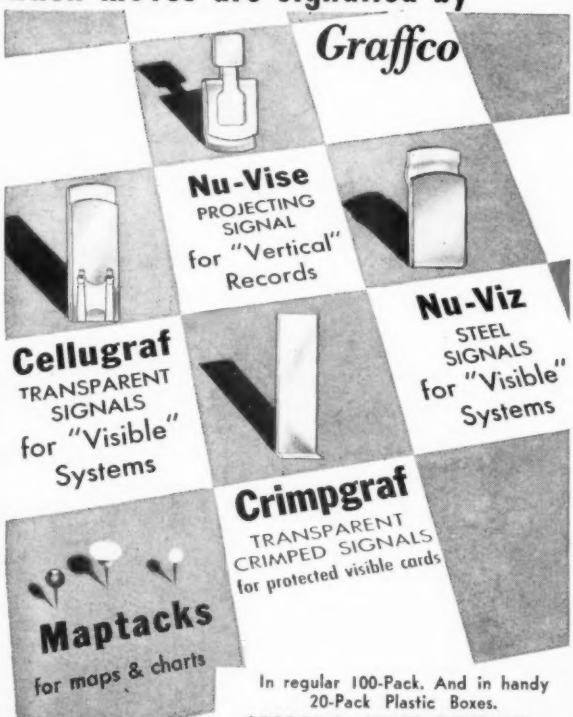

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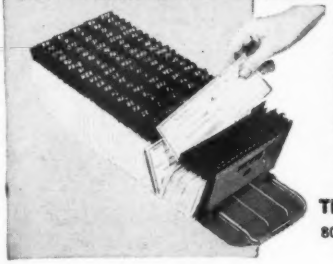

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Work measurement—

(*From page 61*)

ting corrective action in the case of workers falling behind their fellows.

So, the first objective which had been set for the system was achieved. Figures were accurate, and their collection did not add an undue burden anywhere along the line, or interfere with workers' primary responsibilities.

The next problem to be solved was of a somewhat different nature. What officers at the Minneapolis station wanted to find here was some method of presentation that would give to the data compiled the most meaningful form. A Bureau of Aeronautics work measurement report was to be submitted quarterly indicating work units, productive man-hours, and performance rate for each measurement area. But it was felt that using data in this form for analysis purposes would be awkward, and would take an undue amount of time.

Therefore, for the station's own internal use, a series of charts which would enable the data to be presented graphically rather than statistically was devised. One chart was prepared for each measurement area. Then the work units completed there, productive man-hours expended, and the performance rate applicable to that particular area were plotted quarterly. All of this information was taken directly from the figures in the BuAer work measurement quarterly report.

Graphs offer varied advantages

Minneapolis Air Station finds this type of presentation has several advantages. Trends in particular work measurement areas can be spotted much more rapidly, and all information can be more easily digested. Moreover, by plotting work units accomplished and man-hours expended on the same chart as the performance rate, there is no need for cross references to another chart or file, as there often is in statistical presentations.

The third phase of the work measurement for work improvement program has not yet been completed at the Minneapolis Station, because the officers in charge do not feel enough data has been accumulated yet to serve as a basis for analysis and management decisions based on this analysis. While fully realizing that the main point of a work measurement program is to form a basis for decisions which will improve work performance, that work measurement is not an end in itself; they must first develop trends, job standards, and average workloads as a basis for changes in their work performance patterns. This, they believe, cannot be done until basic information has been collected over a long enough period to provide an accurate picture of the station's present efficiency.

The initial charts prepared at Minneapolis provide for the accumulation of data over a two-year period. At the end of this time, the officers in charge expect to develop new job standards for their personnel, as well as extracting other useful information.

Of one thing, they are sure: the ultimate values to be derived from the work measurement program they have developed more than justify the time and effort involved in administering it, since the procedures they have developed have cut that time and effort to a minimum while still providing the complete and accurate information which is the first essential of a work measurement program.

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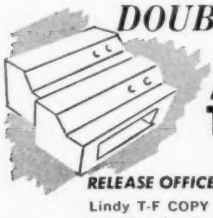

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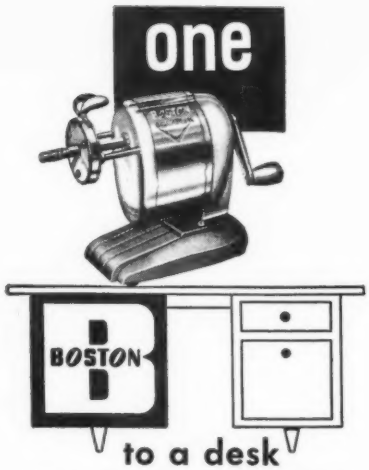

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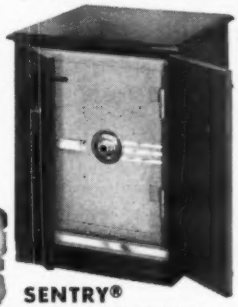

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WANTED—SUNDSTRAND and Burroughs Bookkeepers, also Remington, National machines. Indicate details, model, serial. Gibian Business Machines, 128 Lafayette St., N. Y. 13, N. Y.

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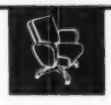

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Use Readers' Inquiry Coupon on Page 88

GET MORE INFORMATION

quickly - - easily

On New Products

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Obtain New Catalogs and Helpful Literature

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For Subscribers to OFFICE MANAGEMENT

This service is provided for the convenience of Office Management Executives in obtaining complete information on the products advertised in this issue. Advertisements are identified by their respective page numbers. Fractional page advertisements are further identified by the initials of the advertiser.

Simply circle the respective numbers in coupon below

Just circle the numbers on which you want further information; fill in your name and address below, tear out and mail to Office Management. Our office will forward your inquiries promptly to the companies concerned.

SEND OFF THIS BLANK . . . FOR PROMPT SERVICE

OFFICE MANAGEMENT
212 Fifth Avenue, New York 10, N. Y.

Please forward to the respective companies, our request for further information on the items we have circled below. There is no obligation to us for this. We understand this is a service to us as a subscriber.

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Manufacturer	Page No.

Name ..... Title .....

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Address .....

City ..... Zone ..... State .....

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This inquiry form good until April 15, 1958

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editorial

"Office of the Year" Awards

OUR annual Yearbook issue, to be published later this month, will incorporate stories on the six offices which have won this magazine's annual "Office of the Year" Award competition. We feel the group this year is particularly interesting because the six offices represent, in their differences, the increasing flexibility of design characteristic of Ameican offices as a whole, just as they represent, in their similarities, the value of basic system and design principles. Thus, in site location and design, the award winners this year range from the heart of the city to completely suburban settings, from a one floor office located atop a downtown store and parking center to a one floor office in a conventional office building.

These surface differences are striking; the similarities, while less obvious, are no less real. The similarities lie in the interior planning of the offices, which insures that work flows smoothly from one department to the next in the processing line; that departments in constant contact with outsiders are easily accessible, while those without need for such contacts are set apart in areas where they will not be handicapped by a constant stream of traffic. The similarities lie, too, in the provision of working conditions that are pleasant and stimulating without being obtrusive, and in the careful, selection of equipment for each of the office's specialized jobs.

But perhaps the most important similarity between the six offices lies in their end product—the high quality of work produced by each, a telling indication of the effect the various factors of good layout, design, and systems planning have on the basic purpose for which the office exists.

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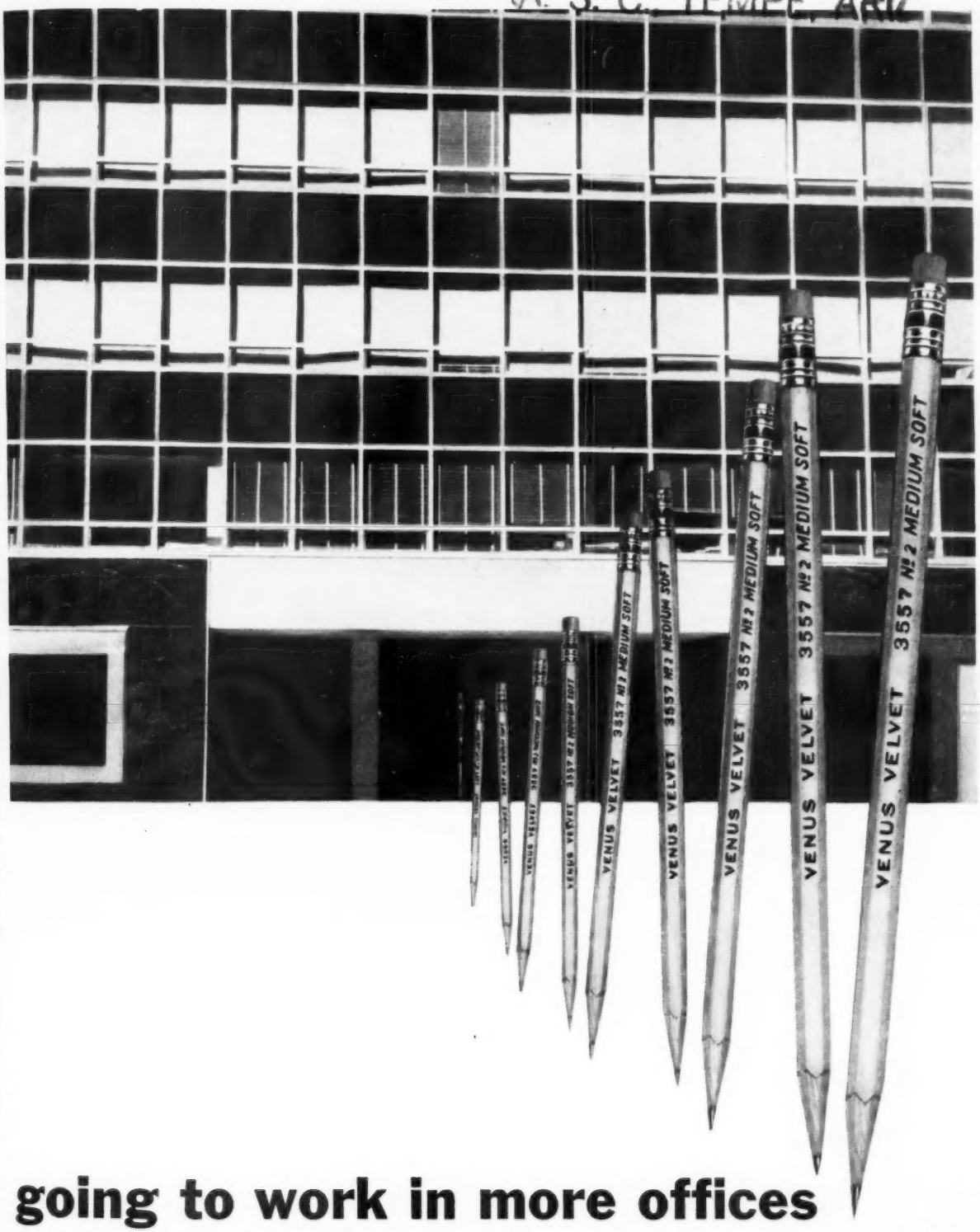

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easier writing . . . longer writing **VENUS** Velvet Pencils

Use Readers' Inquiry Coupon on Page 88

The shape of things to come

Take a peek into the future and see a whole new approach to executive office living. Here is the Delta. It's from the new Steelcase Flight Line — executive office furniture thoughtfully designed for busy men. The massive top, with its distinctively different delta-wing shape, gives you almost unlimited work area and doubles neatly as a conference table for on-the-spot meetings with your staff. And, each pedestal and drawer carries a full complement of personal features to help you handle increasing amounts of work in an ever-shortening day. Better office furniture dealers are featuring the Flight Line now. See it soon! Steelcase Inc., Grand Rapids, Michigan. In Canada: Canadian Steelcase Co., Ltd., Don Mills, Ontario.

Our new full-color Flight Line brochure will tell you more about the shape of things to come. Ask your secretary to write Dept. M

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1958

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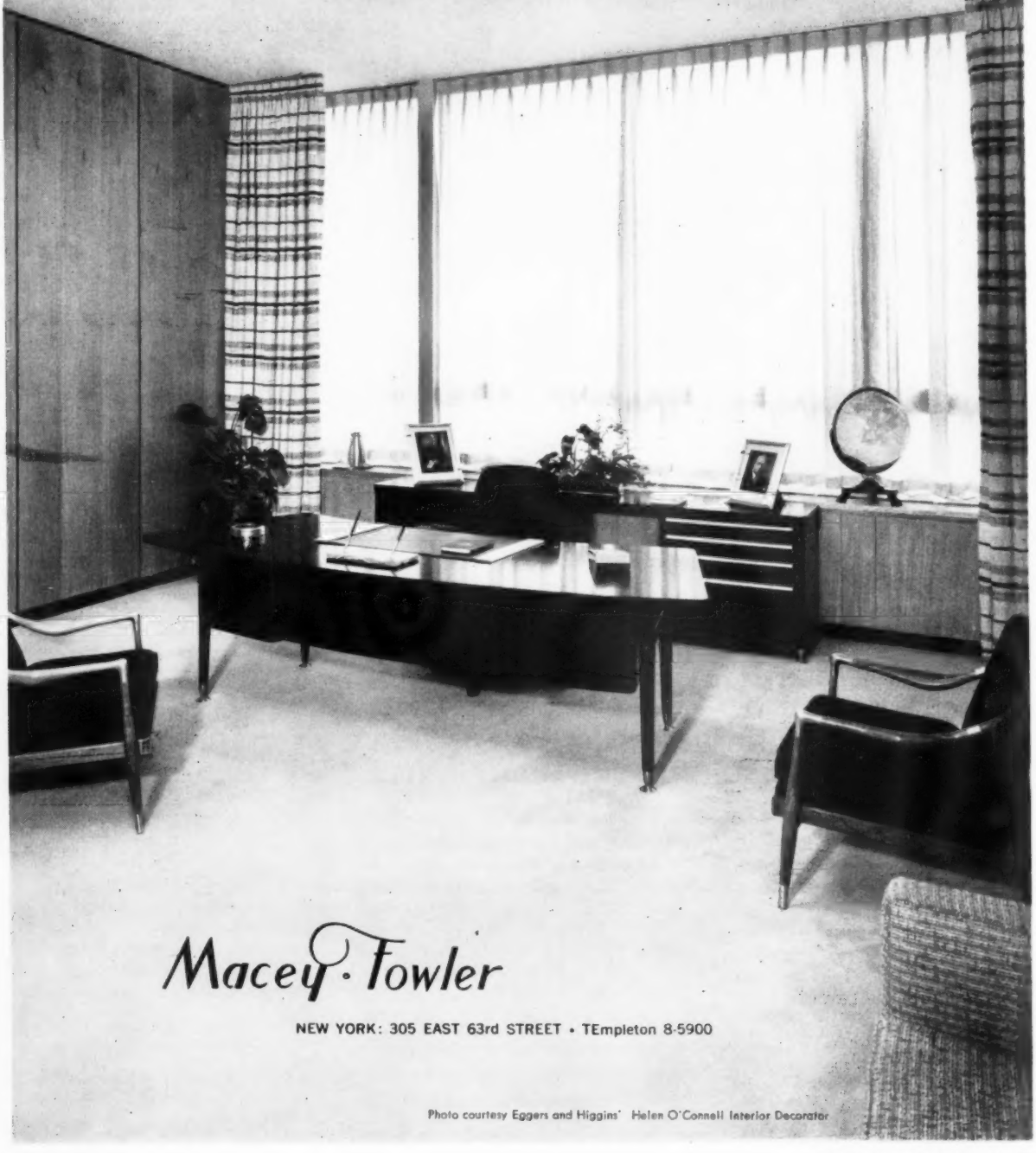

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office management

Office Methods, Equipment, Personnel, and Purchasing

Sponsor of the "Office of the Year" Awards

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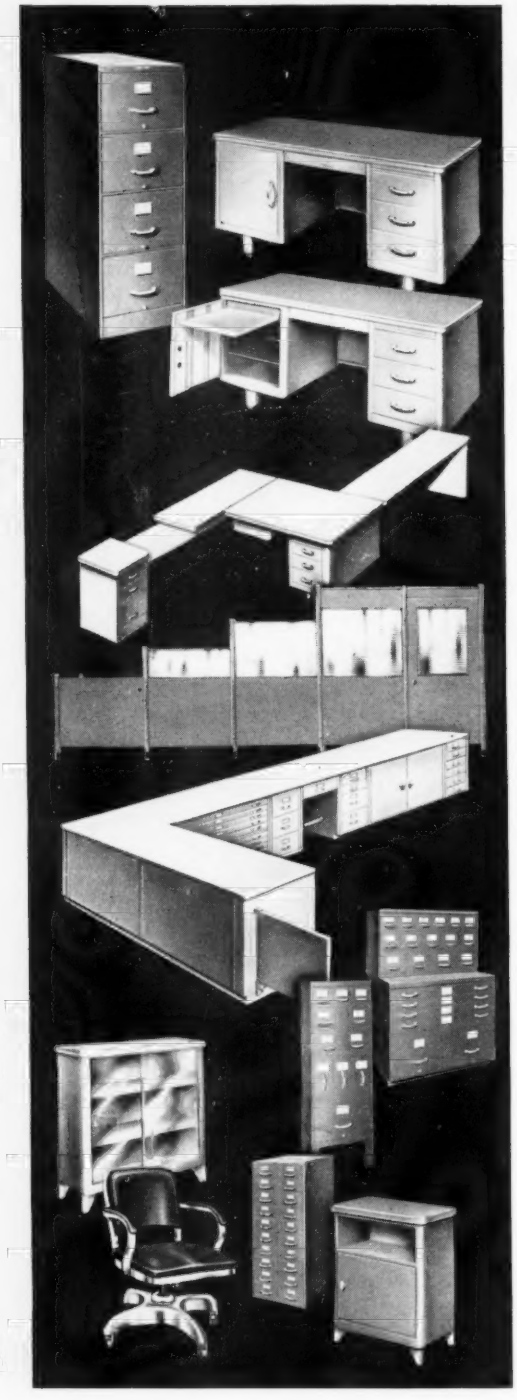

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Posting Desks
Chairs
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Card Files
Legal Files
Card Index Files
Complete Insert Line
Document Files
Check Files
Invoice Files
Cabinets
Cupboards
Blueprint Units
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AUTOMATION
IN THE OFFICE

The pause for review

In only a few short years, automation in the office has developed from a debatable theory into an actuality in many companies. Sharing in this growth—indeed making possible this growth—has been the new science of operations research. Yet each of these two new concepts has had its failures when misapplied. From today's period of re-evaluation, a firmer and more realistic picture of these two new concepts, their advantages and limitations, should result.

Spread of office automation slowed by cautious business mood in 1957

Growing mood of reaction against previously accepted principles, hesitancy in making major capital investments, lessen interest in field —

by Robert M. Smith
Editor, *Office Management*

IF THE national mood of 1957 and early 1958 had to be characterized in one word, a good case could be made for "disillusionment." By early 1957, it was apparent that a strong body of reaction was building across the country against values and beliefs that had existed for several years without much open criticism. Last year criticism became the order of the day, criticism that very often amounted to open rejection of conditions or theories previously unchallenged.

Thus, we had the first serious and general broadside rebuttal of the arguments for the "team" over the individual; the spate of attacks launched against suburbia, and all the values associated with it; the mounting tempo of the assaults on "conformism." There was a ground swell of vague discontent. It existed mainly among a minority perhaps, but it was a minority which had both influence and prestige, and was probably the most vocal and articulate group in the country.

Robert M. Smith

So, self-analysis was already becoming part of the national mood when Sputnik was launched, and the most serious and shocking disillusionment was brought home to every thinking American: the realization that the previously scorned "backward" Communist society was in some respects obviously very far ahead of us. With the business downturn, we had another unpleasant reminder that complacency and a firm belief that things will always turn out well doesn't insure that they will.

The picture was complete. The feeling that there had been entirely too much complacency, and blind acceptance on the American scene, and entirely too little real analysis of what was going on in that scene, was transformed from a fashionable theory into a widely accepted, if not always admitted, belief.

It is only against this background that the downward trend of interest in office automation can be fully understood. There can be very little doubt that the concept of clerical automation, which had so much appeal to businessmen through 1956, was losing some of that appeal last year. One of the valid reasons seems to be that, simply because it had been so highly touted, it became a legitimate target of the conscientious critics of the current scene.

Like most swings of the pendulum, this relative caution concerning the benefits of automation has had some justification; like most swings of the pendulum, the reaction seems to be far sharper than the circumstances warrant. But the fact that other factors too are operating to inhibit the acceptance of the principles of automation has aggravated the situation.

One has been the continuing confusion about what automation really is. The fact that it is a system concept rather than a machine complex *per se* has been repeated ad infinitum in practically every article given to the subject. Yet some companies last year were still rejecting "automation" on the grounds that they had made "computer feasibility" studies, and found that the changes in procedure achieved through these studies were saving them enough money, and had improved their procedures sufficiently to make the installation of a computer unnecessary and uneconomical. Such companies, in other words, were still, in spite of their relative sophistication, their realization that expensive equipment is not justified until it has been planned for, attacking their problem from the wrong angle. Their basic investigation was predicated on a particular piece of equipment, rather than on devising the best possible system to meet their needs, and then installing whatever equipment was best suited to the new system.

This was one factor that served to dampen the enthusiasm for "automation" last year in some companies—the fact that they found they could actually get perfectly satisfactory results without elaborate electronic equipment. The fact that on the level of their particular needs they were achieving "automation" even though no new automatic machinery was installed was not generally accepted by the business community, which still too often equates automation with electronic installations.

Another factor was the experience of companies that revised their systems and did install electronic equipment, with perfectly valid results. But again, all too often, the system was revised with the end question: Can we justify a computer? as the key. A computer was given the primary emphasis in the whole systems revision picture. The net

result was that many companies installed equipment, which did do everything that had been promised and prophesied for it, and did it so efficiently that company officials were buried under a wave of facts, figures, and statistics that they really didn't need, and that merely slowed down their own work. Companies that could economically use electronic data processing equipment, in other words, too often failed to capitalize on the really significant advantage of such equipment: its ability to eliminate much of the mass of operating information that has been necessary in the past in favor of consolidated current information. Companies in this category changed their systems for producing end results, but did not evaluate which particular end results were still necessary, which could be eliminated. Thus, these companies, in installing high speed computers simply weighed down management with reams of superfluous figures.

Too many companies talked automation, but meant by it only a computer, and either consciously or unconsciously went about all their studies and their systems design with the single aim of getting a computer into their organization. To a degree the situation in some instances was very similar to that of the individual who suddenly discovers all kinds of valid reasons for buying a new and expensive car just after his neighbor appears in one.

And the reaction, in a time when the prevailing trend is criticism of the previous prevailing trend anyway, is just what might be expected. Now some companies are simply dismissing the entire idea of mechanized equipment too abruptly, whereas two years ago many were racing to embrace equipment far too elaborate for their needs simply because it represented "automation."

A much more valid reason for the current relative lessening of interest lies in the cost of high speed electronic equipment. Most data processors represent a sizeable capital investment. At this moment, many companies are simply not making capital investments that do not promise a fairly quick amortization. Our present recession does not resemble the savage depression of 1929 in any significant way except one —it stems from a crisis of confidence rather than a major flaw in the economy at the very time when a huge part of the economy's health depends almost entirely on a continuation of confidence. At a time when so much of the economy is built on consumer buying on credit rather than out of current income, any failure of confidence can have snowballing effects. Major new capital investments in such a situation are looked on by every intelligent company with a highly analytical eye; capital investments designed to achieve such intangibles as "improved operating information" stand a poor chance of approval.

And here the manufacturers of high speed electronic equipment have to a degree fallen between the devil and the deep blue sea. Convinced as was nearly everyone else of an "ever expanding economy," they concentrated their early best efforts on their large scale equipment. This was natural: as recently as last spring one manufacturer said that it had more orders than it could fill for its largest computer, and was devoting its research and product funds to improving it rather than placing emphasis on its small general purpose computer. The theory was that small and medium-sized concerns that could not afford a large computer probably didn't need one anyway; they could automate to a high degree simply through other mechanical equipment installed in accordance with a well-designed system for work flow. The theory was perfectly

Too many companies still put the cart before the horse; justify system in terms of a computer, rather than install a computer only when the system indicates its use.

accurate as far as it went: the small and medium-sized office seldom does need a computer, and can achieve just as high a degree of efficiency as the large concern with much simpler equipment. The flaw was that the theory didn't go far enough; didn't recognize that many large concerns don't really need large scale computers either, but could very well be interested in medium-sized units designed specifically for clerical processing.

This situation has changed considerably: a variety of small, relatively inexpensive general purpose computers are now on the market. But they have been arriving at just the time many companies, once enthusiastic, have begun to grow cool toward the whole idea of electronic data processing. They have come during the period of reaction.

The same type of optimism which saw the market for big computers as practically inexhaustible has bolstered the arguments of those opposed to electronic data processing generally. Many of the companies that did install major equipment, after extensive systems reorganization, evaluated their results mainly in terms of how much faster and how much more accurately they could get their work done, how much better operating information they were able to obtain, and on whether or not they were able to handle a rising work load without increasing personnel. There was much less emphasis on how much the installation was saving and/or costing them. This was perhaps consistent with an era in which the main thing was to keep on top of the work load, and forestall the day when additional clerical personnel simply couldn't be found on the market. It wasn't calculated to reassure latecomers at a time when emphasis is on keeping costs down, and clerical personnel have suddenly lost their restless attitude.

Nevertheless, it was a gap in the general arguments for acceptance of electronic data processors as a great boon to business, and it was a gap that has been savagely exploited. *Fortune* magazine, in November, 1957, reported in an article "What You Don't Know Can Hurt You," that it had been unable to find one company that could justify a computer installation in terms of money saved, and reported too that most companies hadn't even tried to evaluate whether any savings were being achieved at all. The implication was clear and some of the quotes were explicit—that it would be extremely difficult to find any company that had benefited financially from an electronics installation for paperwork processing.

What's the future picture?

Common sense would seem to dictate that the more accurate interpretation might be that at that time no company had compiled figures *proving* its electronics installation had saved money. Obviously, if its work load had increased since installing an electronic computer, and its total personnel had not, the chances were at least even that doing without a computer would have been more expensive than installing one. The fact remains that the emphasis in most companies at the time the article was written was definitely not on whether the electronics installation had resulted in actual cash savings, but on other benefits that it might have brought. Yet today, most companies are at least as interested in cash savings attainable through a computer as they are on increasing the speed and accuracy of their paperwork flow. And these figures are sketchy and hard to come by.

These are some of the factors that have contributed to the declining emphasis on — and interest in — automation in the last six months: the confusion of a concept with expensive machinery; the new mood of doubt in which almost everything that looked good yesterday is automatically suspect today; the business decline itself, which is making companies hesitant about capital investments that do not promise fairly quick and fairly concrete financial benefits; the bad experiences of some companies that have fixed on a particular piece of equipment as the focus of their systems studies, rather than the best possible work pattern for their clerical operations.

What does it mean for the future?

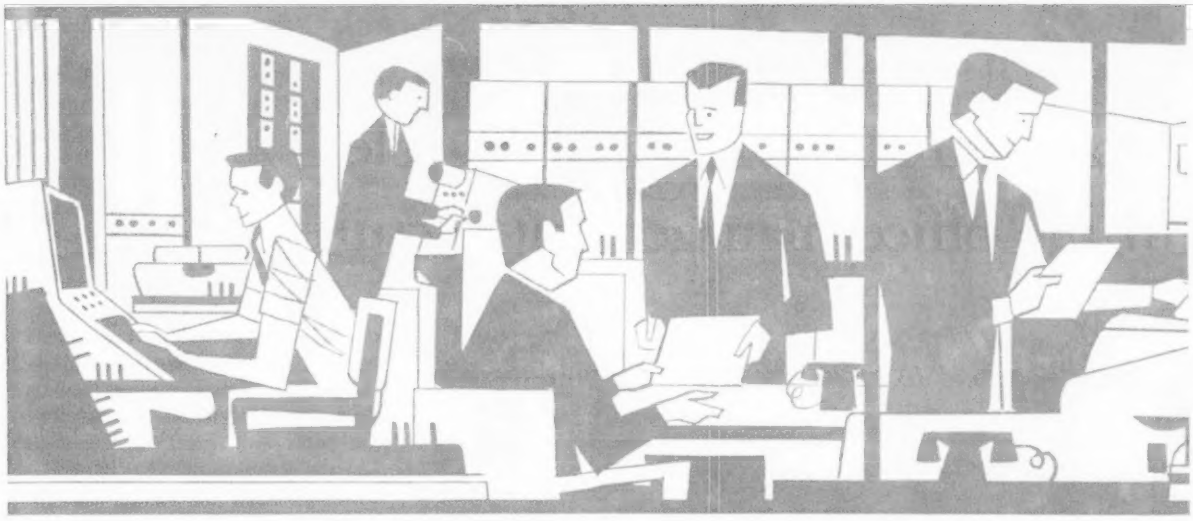
Obviously, a great deal depends on the course of business in the next few months. If the boom picks up again, in a relatively short time, it is very possible that some companies today hesitant about any radical changes in their office picture will within a few months go forward again as though there had been no hiatus at all. Not all will. The general tone of critical analysis, and the new respect for independent thinking will insure that there will be a great deal less stress on doing things because everyone else is doing them than there has been in the past few years. But the very real benefits that mechanization—at the proper level for the company involved — can offer will convince companies on the fence as they see their clerical work load begin to climb again.

The only real dampening influence on this upturn could be the increasing availability of clerical workers on the market in the next few years. The "depression" classes — the young people born in the severe depression years from 1929 on, when the nation's birth rate was low—are giving way in the schools to the "war babies", the maturing groups born during the war and post-war years. For the next several years, more people should be entering the labor market each year. And as the labor market grows easier the advantages of mechanization simply to meet a personnel crisis, rather than actually to improve operations or keep costs down, are likely to grow less and less important to most offices. The pressure to mechanize simply to keep on top of the work load will lessen, in other words; the values of mechanization in order to achieve better results at lower costs will be the subject of greatest interest to officers.

Paradoxically, mechanization could increase just as fast—short of the computer level perhaps — if business does not take an upswing. The difference would be in the way it came about. In a renaissance of the boom, mechanization would be the goal to a large degree; in continued recession, mechanization would be the means to the end: lowered operating costs. In other words, whatever the period ahead becomes, the concept of automation, with whatever necessary degree of mechanization is implied, will continue to gain acceptance in most offices, even though it might not move ahead as rapidly as it did a few years ago.

It will do this because, if the recession continues, companies are going to become continually more interested in cutting costs. And, if automation promises a smoother work flow without increase in personnel at a time of expanding business and workload, the reverse holds true; that it will give smooth and adequate work flow with fewer personnel at a time of decreasing business.

Basically, what does automation mean in an office? This magazine last year traced three stages or levels of automa-



If machines do most of the work, but human beings still must control the machines, and make all the decisions, an office has mechanization, rather than automation

tion within an office. At the very basic level, the office analyzed its whole work flow, determined what end results were actually necessary, what basic raw material in the form of raw information was necessary to achieve those end results, and what had to be done to that information to convert it into those end results. It then figured out the best, simplest, and cheapest way to feed raw information through the necessary processing steps to achieve the necessary end results, with practical transfers of information needed for two or more different end products at the most appropriate points in the work flow pattern.

This in essence is system design—the same process basically that would be used in designing a new factory to insure that the work flow pattern in that factory was as efficient as possible. The major difference is that here it is applied to a clerical processing line, and to an already existing organization. In effect it is revising and recreating that organization and its way of doing things to make it as simple and efficient as it can be.

This, as was said last year, is only the first stage, but it is the essential first step to any degree of true automation. So far no machines have been stipulated. This step has not been taken as a "computer feasibility" study; it has been taken as systems analysis and design. No machines have entered the picture, except the machines already in existence within the office.

After this first step has been taken, then the appropriate machinery *that may be needed and can be economically justified* can be considered in the overall pattern that has been created. Given an anticipated work load of so many units on the average, there may be points in the system where particular types of machinery would be cheaper and more effective than clerical personnel. There may be other points where machinery would not be so justified. Machinery is ordered or not ordered then, in terms of its usefulness in the system that has already been created; not in terms of a study that has been devised to justify—or prove economically unsound—machinery.

Mechanization in equilibrium

When this is done, if it is done correctly, an office has reached a point of mechanization, not true automation. It is mechanization in equilibrium; mechanization at the points where it is justified; human labor at the points where it is cheaper, more effective, or more generally satisfactory than machine processing.

Such mechanization is not complete automation by a long shot, but it is a step toward automation, and a true one—far more true than is the case in some companies that have installed very elaborate equipment with only enough changes in their supporting procedures to keep the equipment busy.

And this is precisely the degree of automation that more and more companies will be working toward if tight business conditions continue to make cost cutting a primary interest of most companies. The only intelligent cost cutting can come from analysis of waste in the organization, and elimination of that waste. Yet every duplication of work, every procedure that could be eliminated or simplified, every point in the processing cycle where a machine would be cheaper than a clerk—or a clerk than a machine—represents waste to the company where it exists. So if the current interest in paring costs continues, it is almost inevitable that this first true step toward automation will become far more general than it is today.

In the same article from last year's Yearbook quoted above, it was stipulated that such mechanization differs from true automation in one major characteristic. A process where machines do much of the work, but human beings still have to control the machines and make most of the decisions is mechanization. Automation exists where machines to a degree regulate other machines; evaluate the information coming from subsidiary machines, and, acting on that information in accordance with predetermined programs, "feed back" control decisions.

An obvious example of the distinction might fall in the field of inventory control. There a machine, such as a computer, accepting incoming information from a variety of sources on losses from inventory during the preceding week and total sales for the past six weeks, could establish production schedules according to a formula in which the schedules were determined by the relationship between inventory levels and sales trends in the preceding period. This would be clerical automation in its highest sense: a true meshing of various streams of information into an "end product" and the automatic "feedback" of that product—the production schedules—to the assembly line.

What is the future for this second

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Operations research and its role in the office management picture

Initially an aid in military decision-making, operations research has doffed its uniform since the war years to emerge as a vital business aid —

by David B. Hertz

DURING WORLD WAR II, at a time when German submarine attacks were inflicting serious losses on Allied shipping, a group of scientists who had little military experience were asked an important strategic question: "Is it better, from the point of view of reducing shipping losses, to run a large number of small convoys or to run a small number of large convoys?"

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These scientists applied the same research techniques to this problem which they had applied previously to problems in their university and industrial laboratories. Within a short time they were able to provide the answer to this question, with convincing mathematical proof. "It is better to run a small number of large convoys: losses were not determined by the ability of submarines to locate the convoys or their ability to aim at a given ship but by the number of torpedoes available for firing."

This group, and others like it, were pioneers in the field of operations research. The first such groups may be said to have originated in England in 1939 or thereabouts with the advent of World War II. They were attached to the "operational" parts of the various British staffs and were assigned problems for which military experience alone was unable to develop satisfactory answers.

The U. S. Navy and subsequently the Army and Air Force set up their own "operations" research groups to tackle a number of similar problems. As a result, there were spectacular successes in the military based upon the work of these groups with such problems as the distance at which fighter pilots should open fire on bombers, the most economical methods for transporting materials to the various fronts, and the most effective way to locate lurking submarines.

After the war, the idea of the operations research approach was applied to various industrial problems; the Operations Research Society was started, as was The Institute of Management Sciences; training programs were developed at Case Institute, Columbia University, Massachusetts Institute of Technology and various other places. Today, according to a recent survey conducted by the author in collaboration with the American Management Association, 324 (51.3%) of 631 reporting companies are using operations research, and an additional 144 companies indicate they are planning to engage in such an activity. These companies represent a cross section of U. S. industry: aircraft manufacturing, chemicals and allied products, electrical machinery and electronic manufacturing, food, metals, machinery other than electrical, utilities, transportation, banking, financial and commercial, and insurance. There seems to be no doubt that operations research has taken hold in business life and where properly applied has begun to yield substantial payoffs—in some cases running into the millions. Like all other forms of management activity, if applied to the right problems in the right way at the right time, it has much to offer. If not applied to the right problems in the right way, it undoubtedly will produce significant disappointments. Therefore, we should examine operations research from the standpoint of the problems it can profitably tackle and the way in which it approaches problems so as to yield money-saving solutions. Just what is the nature of this activity and what accounts for its rapid growth in industry? What are its possible uses and future, if any, in the field of office management?

Operations research has been characterized as the scientific investigation of problems involving the management of organized man-machine systems. These investigations are designed so that their results provide the necessary knowledge and understanding of the system being studied to enable executives to make decisions having maximum effectiveness. Thus, a typical office management problem may involve a question as to whether central inventory control recording and re-ordering is

better than local branch control and reordering. The proper decision in this kind of problem is not at all obvious, and the solution must take into account many aspects including the number of items to be handled, the location of the branches, the direct ordering costs, the back order costs, the lead time for deliveries, the value of the items, the size of the branches, the number of orders per day or week or month as applied to various classes of items, and so forth. Thus arises an operations research problem in office management — combining systems, procedures, data handling and processing and decision-making methods.

The problems operations research attacks are problems of management decision. Wherever an executive has a decision problem for which there is no clearcut single answer of which he is confident, there is an opportunity for developing an operations research solution for that problem. In a problem involving the methods whereby credit is to be authorized for various orders, the sales vice-president of a company may complain that his salesmen miss important orders because they do not get prompt or satisfactory action on credit; he wants credit authorizations to be rapid and easy. The office manager wants the system of handling credit authorizations to be efficient and to be carried out with few or no exceptions so that he can handle the load with a minimum of personnel. The financial vice-president of the company insists that, with the increasing risk in recession times, the company must keep its credit risks as low as possible and must thoroughly investigate each new authorization. What is best for the company? Real, out-of-pocket costs are involved, as are costs of lost sales and of customer dissatisfaction. An answer to be proper and to make money for the company over the long haul must take all these factors into account, weigh them and provide the executive with an analysis showing clearly the consequences in each of these areas of various alternative decisions. Such would be a satisfactory operations research solution. If enough were at stake, obtaining such a solution would be worth the time and expense required.

What does this mean to the office manager? In order to properly answer this question he needs to know something about the way in which operations research methods provide an approach to these kinds of business problems and

how closely modern business and operations research are related.

The heart of the operations research approach is contained in the following obvious statement: "Results depend on what we do to things we can control, and what happened to things we can't control." Using the language of science, operations researchers translate this statement into a working tool in each situation in which the business executive has a problem.

Thus, an operations research scientist begins by developing a measure or number which will reflect the nature of the results desired by the business man in quantitative terms. He then sets out to describe in an analytical way what happens to this number, or measure, as the controllable variables are changed to represent alternate executive decisions and as the uncontrollable variables change as they would in the real business world. This is the approach and relationship that is used in attacking every operations research problem. In it lie both the reasons for success of operations research and the limitations of this technique. It holds the key to spectacular successes because when the relationship among measure of effectiveness, controllable and uncontrollable variables is determined the effectiveness of executive decision is greatly extended; the limitations are that getting at the relationship in a practical, useable form may turn out to be impossible or uneconomical.

In order to solve the businessman's problems, the operations researcher must translate his ideas of how to solve these problems in terms of the language of business into the shorthand of mathematics. This is precisely what he does. Mathematical symbols are easier to manipulate than words in solving complicated problems, and equations can be an important means of getting at the structure of some extremely complex and difficult problems. Operations research requires the establishment of the measures of effectiveness in quantitative terms such as dollars of sales, dollars of profits, net credit loss per dollar of sales and so forth. He attempts to develop relationships which will enable him to rank the value of alternate decisions in these terms. He considers as controllable variables such things as new investment in equipment or buildings, dollars spent for clerical labor, dollars spent for telephone or teletype messages, or dollars allocated to inventories in total or by item. The uncontrollable variables may include such factors as wages and salaries in each job classification, interest rates, competitors' activities, material costs and so forth.

When is O.R. justified?

The translation of the businessman's objectives and problems into the quantitative language of science is the first step in the solution of an O.R. problem. In attacking the relationship of the measure of effectiveness to the uncontrollable variables, he must measure the effect of these variables on the system, their range, their variability, and their predictability. Such variables may even include the weather, as was done in one large oil company to develop a system for controlling inventory and production of heating oil in the winter months.

Thus, O.R., when successful, achieves a method of determining the best use of the variables under the control of the executive. With this method comes an understanding of the process of running a system which enables the executive not only to make an immediate choice of the best decision, but in addition to keep making improvements in the system, as well as to keep the results of his choice under control.

Wherever, in office management, there is a decision problem for which there is no clearcut single answer, there is an opportunity for developing an operations research solution. But it should be clearly understood that operations research is neither magic nor a panacea for all business ills, and not every opportunity may be one for which the use of operations research will provide a practical, economic solution. Where there have been failures in the successful application of operations research, the results of the survey mentioned previously indicated that they have stemmed from overly enthusiastic application to problems which either did not have sufficient payoff or for which present knowledge and experience do not indicate a likely solution.

A measure of effectiveness of using operations research—or indeed any management technique—is expected profitability. Expected profitability is the difference between the possible gains to be realized through an O.R. solution to a problem and the estimated cost of solving it. Each opportunity for applying operations research in office management must be examined for profitability on its own merits, but it can be said in general that the immediate payoff on a problem depends upon how far from an optimum solution the present approach may be and the total amount of cost or potential profit involved. Thus, in a recent study involving the choice of optimum alternative methods for following up delinquent accounts, while only a small percentage was lost through non-payment, the recovery costs were so high as to actually result in a net loss to the company. In this case, the opportunity for savings over the system then in use were substantial. On the other hand, if the problem is one of determining the minimum number of clerks who can be used to achieve a given objective under varying conditions of daily peak load, where the present total clerical payroll is $100,000 per year and *at most* one can see the possibility of reducing it 10%, an operations research study is hardly in order.

The ultimate payoff from O.R. studies, however, cannot always be measured in terms of the solution to the immediate problem. Very often in the case of such studies the true value lies less in the conclusions reached than in the questions asked; the accepted assumptions and policies re-examined rather than in the immediate results achieved. For example, a recent study made in a large transportation company had as its objective the development of the best method for controlling and dispatching available crews to meet current requirements. The results of the study actually led to higher expenditures for control and dispatch; however, the questions raised during the study of this part of the operation led to an examination of the methods of determining the number and location of reserve crews, and a subsequent study revealed opportunities for large scale savings in the latter area.

There are numerous areas within office management which have sufficiently large savings potential to be possible candidates for O.R. studies, such as the ones discussed briefly above. In addition, there is the area of systems and procedures involving information handling and data processing. The function of an office may be described as being that of processing raw information into a finished product for very specific mar-

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Personnel

Problems and practices—1958

For all the capabilities of modern business machinery, the only truly indispensable link in the office's chain of command remains the human worker. It is he who will prepare the information which the machine will process; he who will act upon the results of that processing. As automation is introduced into more and more offices, the inherent value of each individual employee will become even more pronounced.

Present trends seem to indicate that more mothers with children of school age will seek jobs

End to personnel shortage sighted even if economy enters another boom

Influx of "war babies" within next few years, social trends that will keep more women at work should solve clerical staffing problems —

by Edith Conner
Associate Editor, *Office Management*

IT IS rather startling to observe how the face of a nation can change in the relatively short span of twelve months. Politically, in terms of world-wide prestige, the face of this nation has happily changed in a year's time from one of sublime confidence, to chagrin, to a resurge of healthy confidence. In terms of domestic problems, though — more specifically, in terms of the worker — there has been a considerable change since this time, 1957.

One year ago, it was noted in the Yearbook that there were more jobs on the market than there were people to fill them. Companies and offices were busy searching for ways to fill a serious gap of good people—were beginning to turn, in their search, to measures they once regarded as "emergency" – temporary office workers, older employees, etc. Complacency and prosperity were the order of the day and the personnel picture mirrored this eloquently.

Today, of course, this is not the case. More than 5,000,000 people in this country are jobless as the result of a serious business downturn, forming the highest number of unemployed in the last 17 years. Optimists say this recession will break in the middle of the year; pessimists say it will continue until 1959, with unemployment increasing as business fights to remain prosperous. Whoever is right, many companies are taking no chances; a general air of worried caution has led to heavy cuttings in inventories and operating expenses. A recent survey by *Business Week* of large and medium-sized companies throughout the country revealed that they were cutting budgets drastically, especially in areas not directly related to current sales. A small percentage revealed that they would even cut executive salaries if the need arose.

How is this affecting the office? In spite of the bleak picture the business recession is presenting across the nation, there are still a good many companies—many offices—which are sorely in need of workers. So far, areas most hard-hit by the downturn are the factory towns and smaller cities. It is the production line, not necessarily the white collar department, that has been whittled down. Companies in the big-

ger cities have not yet been – possibly will never be—as seriously affected. Indeed, many are still hiring employees on all job levels, rather than reducing their staffs. Good executive material is still in demand.

Even so, while these offices might seem to be denying the seriousness of the present situation with their complaints of a "tight market," they, too, are reflecting the air of caution and uncertainty that is now characteristic of the country. They are giving more thought to the selection of personnel; more effort is being spent in assigning the right jobs to the right people. In short, we have now in many cases a re-evaluation of the total office operation.

And to date, while most of the impact of unemployment has been on the production lines, it is affecting the thinking and attitudes of office workers. The office worker does not live in a vacuum; and unemployment can spread. Moreover, the general emphasis on cost cutting is not unnoticed by office workers. So, for the worst possible reasons, the personnel picture as far as clerical workers are concerned is improving. Workers are more diligent on their jobs, less prone to shift jobs.

Paradoxically, in some areas the fact of unemployment in factories has meant greater difficulty in recruiting new clerical workers. Simply because the average clerical worker today is thinking a lot more seriously about the whole employment picture, she's hanging on to the job she's got, and not casting a longing eye at the company next door where salaries may be a little bit higher, but where she hasn't acquired any seniority. And, the company next door, trying to recruit workers, finds that recession has made skilled office workers harder to find.

But this is a comparatively rare contradiction. And it's likely to grow rarer if the unemployment figures don't start dropping. For one thing, married women whose husbands have been laid off the assembly lines will, if they have clerical skills, in many instances go back to work. Women now at work who have been planning to marry and leave their jobs may very well have to postpone their wedding plans, and even when they do go ahead, they're likely to stay on the job for security reasons.

And, also, although there has been comparatively little dropping of clerical and office workers, and many companies are still hiring additional workers, there are strong signs that the rate at which they're expanding their staff is slowing down.

Testifying to this is the significant change that has taken place in the recruitment of college graduates. Many companies that in former years actively recruited college and university graduates are showing a decided change in their hiring policies. A recent survey by the *Wall Street Journal* of some 40 companies from New York to California reveals that two-thirds plan to hire fewer college men this year than they did in 1957. Some will slash such hiring to as little as one-third of their 1957 total. Some — departing sharply from past procedures – won't show up on any campuses at all since they feel they can get all the help they need by waiting for job seekers to come to them. Many other companies, the survey showed, will hit as many campuses as before, but will trim considerably the number of students they hire. Another change: job requirements often will be stiffer than they have been in the past, and starting salaries will probably stay the same as last year or rise only slightly above 1957 averages, in sharp contrast to years of increasing wage rates as companies sought to attract graduates over competition by means of high salaries.

As well as extending relatively less tempting offers to students, companies are demanding more in return. "We have reduced the number we will hire, and we're being very selective in our choice," said one, and another: "You can afford to ask for more in experience, in courses, in grades and in personality this year." Some companies indicate, too, that they are turning from the men fresh out of college and looking, instead, for experienced help made idle by cutbacks at other concerns.

Another recent campus survey conducted by the New York *Herald Tribune* reported similar findings. The conclusion: 1958 will be the toughest year for new job-seekers since 1949 – employers are choosier; companies are cutting down on campus recruiting, even of engineers and scientists.

What does this mean from the worker's viewpoint? It means that he or she can no longer feel as secure in a position as was the case a year ago—said position might easily be eliminated as budgets are cut. A change has come about in many a woman worker, for instance, who might have felt last year that her job was just a fill-in until she got married. Today, about to be married or not, she can not afford to be negligent and nonchalant about her job. If she *is* a prospective bride, how does she know if her husband will be able to keep his job?

If it is producing a change in the attitude of the worker within the organization, the changing attitude of business – the growing choosiness – is also having its effect on the non-worker looking for a job. June graduates, for instance, are signing up for more company interviews this spring; they are writing more job letters; an increasing number are seeking out company employment offices.

This serious attitude toward business on the part of the worker is refreshing, in spite of the reasons for it. It may, perhaps, pose a bit of a problem for management if the present situation continues. The tables have been turned and it is the graduate who no longer can be choosy. He or she may take a particular job because he needs a job and can't get another, but he may not be suited for the position at all. Careful selection of personnel – good testing methods—are needed now by management more than ever before. Aside from this, it offers the office a greater chance for maximum efficiency, maximum output.

With new emphasis on cutting oper-

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Pressure against compulsory retirement at a given age will grow

Management development: are we stressing programs over people?

Is the conventional "management development program" confusing techniques with objectives? And does it always have the right objectives?

by Jack B. Collins

IF DISCUSSION of a subject in business and even non-business magazines and the public press is an index of its importance, management development might well be the most significant personnel development of recent years. The 1954-1955 study of management development by the American Management Association underscores this significance. Its study indicated that 54 per cent of the companies responding (460 companies of all sizes located throughout the country) had some systematic plan, program or method to develop people in and for management responsibilities. There is every reason to believe that the growth of management development since this study is equally impressive.

My purpose here is to raise questions about some management development practices. Let me say that evidence I have seen strongly suggests that the broad objectives of management development are sound, indeed their achievement in whole or part is a vital necessity in today's business world. Therefore, whether managers should be developed is not at issue. The central purpose here is to examine in part the way many organizations are going about it.

Before advancing these questions let me state some of my tentative conclusions. These conclusions are based on a review of the literature, discussion with my colleagues in management development, and some direct observation of activities in business and government:

1. There is great wasted effort when the objectives of management development are confused with its methods.

2. Some of the methods currently in use in management development programs do not assist development; in fact, they retard it.

3. The chance that management development is (or will become) a fad or fancy is increased in those companies that tacitly assume by establishing all purpose programs that all managers have equal needs.

4. We have spent more time trying to give managers skills and knowledge we think they do not possess than in the harder job of creating opportunities for them to use the talents they already have.

Hopefully, these questions may illuminate the critical problem areas:

1. How did the need for management development evolve?

2. Are we spending too much time constructing management development programs and not enough time helping managers to develop?

3. Are we using our present knowledge of individual behavior in organizations to best advantage?

4. How can management development staffs improve their practices?

Management development is the generic term we use to encompass many specific activities: performance analysis (usually called executive appraisal), management skill inventorying, individual training and development, etc. The critical activity of management development — or the one that causes our greatest concern — is individual development.

If developing subordinates is one part

Individuals *can* become cogs in today's giant organizations

Once a program has been set up, how often are people "drafted" to fill the class schedule?

of every manager's job, why single it out for special attention? Part of the answer to this question is found by examining the steady growth of the modern corporation.

Experts tell us that more and more we are dividing labor and effort into smaller and smaller pieces. The rapid growth of technology in the past and the promise of even greater growth in the future will call for a more specific expertness. This greater subdivision of knowledge and effort needed to utilize the forces within our grasp, for example, atomic energy, promises to increase in the future. Men and women in modern business organizations find themselves applying their skills and energy to very narrow but important tasks. The sum of each of the separated tasks well performed results in greater mastery and insight into the problems for which the organization was created.

The benefits of specialization are well known. I do not propose a recital of its advantages here. It is the inherent dangers of specialization to organizations and individuals that merit our attention.

What are these dangers? The first is that an individual in these large and complex organizations can easily become "lost"; he may become so devoted to his highly specialized daily work that he will gradually create for himself a rut which will in time engulf him. No longer will he be able to see a relationship between the work he does and the work of others. In this narrow environment, he will understand less and less of the broad purposes of his job and his company. Company policy will interest him only insofar as it applies to his own working conditions or his own specific performance. He will be in peril of rapidly becoming a faceless, nameless cog in a vast machine. This prospect troubles him deeply.

His plight is of equal concern to top management. By definition, top management must maintain a broad and general view if it is to guide a company successfully. Management at the top of the organization is an intensively creative process, and top management well realizes what narrow specialization can do to the broad creative powers of a capable individual.

This leads to a second danger. It is highly possible under the circumstances that the product of specialized efforts will never reach the market because the work of the creative manager may not —because of organizational complexity — receive top management's attention at the right time. Of what use is the brilliant report not read, the efficient procedure not used, the new insight not mentioned, or the critical question not asked?

To avoid the dangers of specialization and still receive its benefits, we have extracted part of the manager's job—developing subordinates—called it management development and devoted special attention to it. Effective and timely use of the tools of development — inventory, education, and training — with time and patience can help offset the disadvantages of specialization.

The next logical question is when does a company need a formal system to develop managers? If the dangers outlined above do not threaten a company's present or future position, and its managers in their day-to-day work

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are discharging their training responsibility, there is no need to devote special attention to the problem.

Let me be a litle more specific about the need for formal management development efforts:

1. It is more *probable* that there will be a need for formal management development in organizations that number their employees in the thousands rather than in those which number them in the hundreds.

2. If your company and its managers are doing the following, you do not need management development; you have it.

a. The policies, practices, procedures, and standards of performance exist and are known in each administrative unit.

b. The responsibilities of all managerial positions are as clearly defined as the dynamics of the organization permit and there is a constant and conscientious effort to keep these definitions current.

c. Managers generally solicit recommendations and suggestions from their subordinates, delegate responsibility and authority effectively, demand and get completed staff work from their staff assistants, provide learning opportunities for their own subordinates, and insist on high quality performance from all.

d. Managers talk to their subordinates as candidly and as often as they do to their superiors.

e. Managers informally counsel and coach their subordinates and periodically help them analyze their own performance with a view to developing their strongest points and eliminating their weak ones.

Present "appraisal" procedures may have entirely too judicial an air

When, from time to time, I ask a colleague how management development operates at his company, the answer usually takes this pattern: first he shows me a booklet entitled, "Management Development Program in X Company." (This program usually sets forth program objectives and forms and procedures for conducting the program. Mixed in with this material are some general exhortations about the values the company may derive from managerial growth.) Second, I am told how very hard it is to make line management understand the values of the program. Third, I am reassured that "although they have a long way to go" they have made substantial (but unspecified) progress.

This exchange always makes me wonder, if I should ask "How's your wife?", would I first be shown the marriage license?

Perhaps we should examine a little closer that word "program" and its use in connection with management development. We use the word "program" every day in business and we apply it to a variety of subjects—cost control, automation, maintenance, etc. The question is, are we applying it correctly when discussing management development?

Just what is a "program"? Webster says it is a "plan of future procedure." This definition is too broad to be particularly helpful. Let's turn to another: the Department of the Army, to which plans and programs are equally familiar, calls a program "the course of action to meet a specific objective according to a time schedule." The Army's definition goes on to explain that three essential aspects, quantitative terms, time-phasing, and intent to initiate, are always inherent in a program and distinguish it from a plan. It defines plan as "... detailed statement of the course of action to be followed to attain a desired result..." A plan becomes useful when its assumptions are satisfied; add to satisfied assumptions, intent to initiate and the plan becomes a program. Even a cursory review of the literature of business and industry reveals that businessmen tend to use this latter definition of program (a plan in action) when discussing other functional activities. A program is somebody's responsibility; it only needs personnel, facilities, material and money to operate. The question then, is, can the term "program" be properly applied to management development?

The whole process of development is one of creating a qualitative change—not a quantitative one. It is true that the *number* of managers a company wants to develop (define "managers" as you will) is a quantity; but does knowing how many managers are to be developed without first knowing what qualitative changes must occur in each add much to our knowledge?

Do we know enough, assuming we know what qualitative changes we want in each manager, about the rate at which each can absorb and use the knowledge needed to bring about these changes to talk of time-phasing?

Most management "developers" concede — some almost wistfully — that the development of managers is ultimately controlled by the individual involved, and that the organization of which he is a part can assist or inhibit his development, but cannot unilaterally start or stop it. Who then controls the "intent to initiate" factor of a program? Each manager? The company?

Most of us will readily admit that the individual's needs and capabilities, the quality of supervision he receives, the things he does, as well as his personality, are basic to development and vary widely, both in kind and degree, among individuals. Assuming we have all the necessary facts about all the individuals in an organization, is this knowledge additive? Can we arrive at a common denominator of requirements by examining individual needs and then adding them together, or must we assume, out of our own knowledge, what the needs of the group are? If we do the former, how do we reduce the qualitative requirements to quantities in order to add? If we do the latter, how can we be sure we are estimating the needs accurately? To have a company-wide program with a common goal, must we not derive our program objectives either by summing the needs of individual managers or by assuming a total need? Should we not ask at this point whether it is necessary or desirable to program management development *en masse?* Do we ever need a company-wide program common to all, or should we furnish *ad hoc* assistance to the individual manager?

Is genuine management develop-

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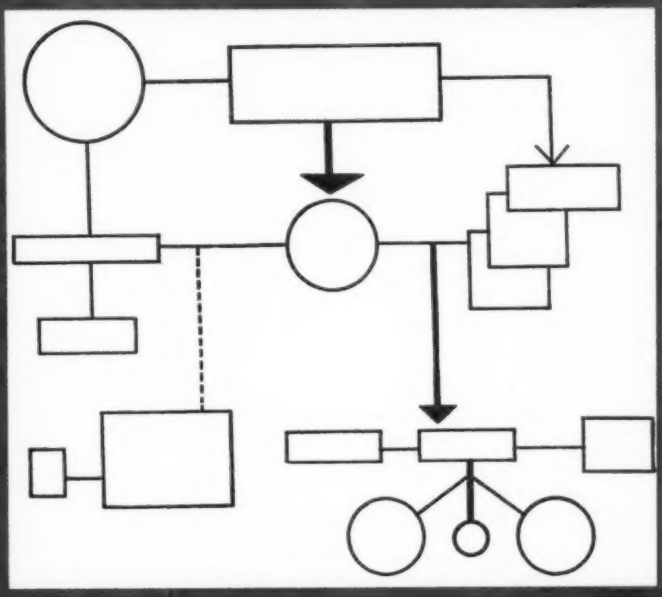
SYSTEMS
DESIGN



Consolidate, integrate, coordinate

There is no processing line that is so complex, no job so difficult or unusual that it defies application of a good system. That is true in all fields. But in the world of the office, which must make such a multitude of end products from one stream of raw material — information — good systems are not merely aids to better work, they are the essentials of effective work.

Continued stress on major improvements will pay larger benefits than frantic efforts to save pennies

Systems planning in a cost-cutting era—what it can and must do

Systems men believe these things essential: a redefinition of company purpose; organization analysis; stress on major systems improvements —

by Allen Y. Davis

DURING THE Systems & Procedures Association's International Systems meeting last October, a few of the attending systems managers met in a private "seminar" to discuss a double-barrelled question: How would my company react to a sizable recession? What general guides are there for the Systems Department's own operation? These managers felt that by trading estimates of their companies' internal reactions to a souring economy, they could have a meaningful background against which to exchange some ideas on how the systems function could best help itself and the company over the long run.

In October, 1957, today's recession had just begun to develop as more than a limited problem. No one cared to guess how far it would go, or how long it would last. Even if the stock market slide had been gradual and undramatic, the economic weather was certainly changing. These managers felt that it was worth a careful look. Their concern was not with the stock market behavior as such, or with the economy in general; it was with the changes which they could expect to see inside their own companies within the following two to six months.

Here were professional systems men doing the sort of wide-scale evaluation which their own top managements were doing. Top management questions about the future were once and for all being taken as systems problems. The group assumed with good reason that good systems recommendations coming out of such an appraisal would be useful to management, because the recommendations would be identified with top management's needs to meet a major change. This is the systems function acting at its best, and doing its professional work at the right time.

Little attention was given to the effects the recession might have on the systems departments as such. Most of these SPA men had known each other personally for several years, and they already knew that a couple of the departments represented had already been trimmed. Most of the others were on notice, or had put themselves on notice, to expect the possibility of a reduction in size, or at least some rough handling in the budget sessions to come. Most of them felt that going projects would be continued, and two spoke enthusiastically of expansion and a heavy increase in workload. Any of those present would have generalized that (1) the systems department was an exposed function in many companies, and could expect heavy-handed treatment from any management which panicked, and (2) that where systems had done a

meaningful job in management's terms, it could expect thoughtful consideration during a recession.

Most of the managers felt confident about their companies' basic strengths and resources. Nearly every one felt that his firm's finances were in reasonable shape, though a few pointed to weaknesses of financial know-how and occasional gaps in the reserves. Two felt that their companies could ride through a rather prolonged recession. The general expression was that the companies involved had been lucky in getting some good personnel. Some of the poor performers had been shaken out at most levels of the company, but each agreed that a good deal more pruning could be done. All felt that their firms were producing worthwhile goods and services, though none would say that some expensive frills and heavy 'dogs' in the product lines couldn't be weeded out.

Given these generally favorable ratings, then, what did these managers think about their companies' probable reactions if the recession really began to stretch out?

The frankly-stated general opinion was that their companies were not ready to face a downturn, and probably didn't really know how to meet it. They foresaw internal troubles and management reactions which they felt would be out of all proportion to the seriousness of any recession which could reasonably be expected.

Why?

"We've grown too fast," one said. "Our top team hasn't really learned to handle the expanded size of its job."

"Things have been good so long that our brass is feeling almost guilty," said another. "Now we'll try to sharpen up, and we'll change course too fast. We'll lose a couple of sails, and probably a mast as well."

"We haven't got the parts really working together," added a third. "We're too big now to have each part working by itself. Things have been rolling pretty much on their own, and some of the routines I'm worried about have been stretched all out of shape. I'm wondering how long some of the patches will stick."

The next, the most outspoken critic of the group, took the group by surprise with his wholesale blast at management in general. Most of them, however, felt that parts of his critique applied to their own companies in some degree.

"I think most management, top and middle, just isn't doing its job as well as it should. With exceptions which I'll grant, a good deal of what I've seen has been a sloppy, short-sighted, badly planned, poorly run, and wastefully organized performance. It is inefficient by almost any standard, mainly for lack of any coherent idea of what it wants to do. It's imitative; it's looking for easy ways out of its troubles. It kids itself while it's kidding others. It has been claiming success because of its managerial skills, when as a practical matter —at the size company I'm talking about and in such a boom economy—it takes almost superhuman efforts to fail.

"The internal failures are still hidden. There's been no pressure put on the places where overloading and bad practices have been disregarded. A good many king-sized mistakes have been paid for with profits which had almost nothing to do with productive efficiency or organizational skill.

"I think most of these firms are going to have trouble with a recession, because their managements are basically undisciplined. They haven't the patience to work out one good solution before they start tinkering again, or panicking for any sort of solution. They can't walk the tightrope."

The phrase "walking the tightrope" was picked up again and again as the group talked over the changes which it felt a recession would impose. It was used to refer to the problem of making changes, "sharpening up", "improving operations", and doing these economically during a time of trouble and stress. It referred also to some of the two-sided difficulties of the management job: balancing the need for conservatism against the wish to carry through needed changes, and balancing the need for patience to work out a change and see it through, with the tougher requirements for making decisions which would have been easier to make before the weather started turning bad.

In the past, each of the managers had experienced some problems in trying to sell new roofs while it wasn't raining. All of them had ridden with their companies on the broad back of the bull market, into the age of diversification, mergers, computers, and operations research. In spite of the fair-weather improvements in hardware and techniques, most of them had tried to run up warning flags to get at the problem of preparing for bad weather. They were as a rule pleased with management's acceptance of computing equipment, but long ago began to feel concern about the related coordinative implications which their managements were missing. With a prudent eye for the day when the economic weather would put pressure on costs, patchwork jobs of organization, and fuzzy statements of purpose and responsibility, they had tried to get some "management clean-up work" done, or at least started.

"By getting some of these decisions made now," they had argued a year ago, "we can put some of the unpleasantness behind us when it's easy to pay for. Later, when the pressure is on, and they start hitting the panic button, we'll be able to get at some of the refinements. When the fat years are gone, we'll be glad that we're in shape to pick up some of the smaller savings we don't care so much about today."

By Labor Day, the stock market had reflected more than its own summer peculiarities. General indicators pointed to some wider shifts in the economy than had been expected earlier in the year. Time had run out on the warnings, and the first clouds had begun to gather.

By the end of the year, a good many 1958 budgets were looking significantly

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different from those of 1957. With the change of weather outside, the climate for internal management and for systems work began to change, too. Both top management and its systems managers began their walk along the first few feet of the tightrope. The guidelines which the systems managers had developed in their "seminar" were put more and more directly into use.

Top management's questions to sysems were: What can we cut out? How can we make sure that we're doing the right things? How can we improve operations? Systems managers were happy to be consulted; this was a big difference from post-World War II, when they had been one of the first functions to be cut back. They were now being consulted for ideas, and for know-how — among other reasons because they were usually deeply and directly involved in computer planning, major IDP installations, and broad-scale systems revisions.

Systems' question to itself was: the IDP and computer work is going to be necessary over the long run, but this is a hard time to ask the brass to swallow some of the administrative and organizational changes which these projects call for. Should we change the focus and concentrate on other types of problem until the weather clears a bit?

The "seminar" group recognized that at bottom the questions were dealing with the same general thought. Each wanted to get at the most important points of leverage. The systems men hoped to see work carried through on the projects and installations already under way. All of them wanted to preserve the healthy staff relationship of the systems function to top management wherever it existed. They all wanted to deal with major systems areas, where the big problems were, rather than be driven back to the endless, senseless gathering of pennies which had been so characteristic of other troubled times.

The major guidelines which these managers stated for themselves were regarded as the first recommendations they wanted to make to their managements. Nothing that has happened since the "seminar" seems to affect the validity of the points that they made.

The first general recommendation centered around the managers' hopes that their managements would be sure of just what they had to accomplish. They were hoping to see a *re-definition of company purpose,* especially if that statement gave indications of how the management intended to handle several months or more of a serious recession. Most of the managers felt that this would tie planning efforts together. Since they also felt that most of their companies could well afford a breather in the race to grow and to add products, they saw the breather as a chance to "pull the company together", balance up the workload, and see that all parts of the company were working together sensibly. If these objectives could be made part of a statement of company work to be done, the recession could be turned into great positive values.

Second, they recommended that a clear-eyed, comprehensive look be taken at the *company organization,* and its suitability for fulfilling the fresh statement of purpose. In part, this recommendation was intended to get at the imbalances which had grown up over the past seven to fifteen years. In part, it was aimed at the problem of translating general company purposes into meaningful, reasoned definitions of missions for each of the major divisions of the company. Many systems men have felt that the worst problems they have met in IDP planning and computer installations have come out of organizational or administrative structures no longer suited to the speed of management action or to the kind of coordination which the use of these techniques requires.

Third, the managers recommended that they continue to work hardest at the *systems review and re-design of the major systems* of the company. They recognized that a greater number of small fire-calls than ever would have to be answered; but they specifically set their sights on the big, primary functions as the operations most worth their concentrated attention. With a great deal of IDP thinking entering the picture, these systems were being conceived as even longer chains than ever: the order-billing function, for example,

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Most systems men feel that management is "walking a tightrope" these days in systems applications

The Army roll call is a perfect example of a simple, but highly effective checking system

Let's protect profit by a "second look" at paper processing costs

Practically every company has costs which can be cut; here are several ways to control mounting paperwork expenditures —

by Alan C. Negus

THE SOBER economic climate in which 1958 has begun, in contrast with the unbounded optimism that characterized the opening months of 1957, is having a variety of effects on businesses across the country.

Some businesses that have been hurt are sitting tight, in a posture uncomfortably akin to the frozen inaction of fear.

Some are simply asserting that costs must be cut, without any very clear idea of what costs are out of line, or by how much.

And some are recognizing the fact that net profit is still the margin between income and costs; that in a period of declining income, profit can still be protected if costs are cut. The catch here is to insure that costs are not cut in an area where the slash will do the company harm.

But practically every company does have costs which can be cut, not only without harm but with positive benefits to the company. Moreover, in a time like this, when a generally quiet business situation means management can give attention to something other than a constantly expanding volume of sales and work, any company can, calmly, logically, and productively, institute programs that will not only lower costs now, but will insure against their rising at such a fantastic rate when business once again begins to move ahead at its former pace.

Basically, a company's major cost items are raw materials, personnel, and rent or amortization, maintenance, and replacement of physical facilities in plant and office. Now, if sales decline, raw material costs will ordinarily be cut almost automatically as an instinctive production reflex of

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Item	Units	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1958
Volume Starting	Cu. Ft.													
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Typical monthly check list for use in gauging records center efficiency

Even the best designed system will begin to slip unless it is checked . . . .

the company. Personnel costs will not be cut under ordinary circumstances, unless the company is so hard hit that it must begin to lay off people. That, fortunately, is still comparatively rare. But various weak areas can be explored and cleaned up to make more efficient use of the present personnel, and to reduce sharply the costs, both current and potential, of physical facilities.

What does the average executive actually know of all the ramifications of the work done in his company? If there is some waste motion, some lost time, some inefficiency, will he always be aware of it?

We all know that he can't be, that he can't know too much, because there are too many details involved in the work flow of the average company. It takes intensive study by a systems analyst, either on the company staff or coming in from the outside, to reveal the weak spots in the paperwork chain, even though operating management may be able to find such spots as part of its daily work in the manufacturing chain, where results are more tangible, and standards more exact than in the office.

But, of course, few people argue any more the importance of such systems analysis, nor the necessity of it being done on a "walk-through" step-by-step analysis of every movement in any paperwork chain. Few would argue against its being carried out by a trained analyst. And a great many companies have undergone complete systems revisions, and so now "know" they are operating on the tightest and most efficient possible paperwork schedule.

How can one be sure of his program?

Still, how do they know? The great advances in paperwork control measures have been made since the second world war. Programs that were designed during the immediate postwar years are now over ten years old. Yet the field of paperwork procedures, knowledge and improvement, has continued to advance at a very rapid pace since that time. So a program designed in 1947 or 1948 is at least a dubious enough proposition today to bear checking. Moreover, even the best designed system will eventually, if unchecked, develop bugs. The changing work of the company over the years, the replacement of personnel, the changing business atmosphere in which the company has its existence, will make procedures that were vital at one time, less important or perhaps even useless at another.

However, especially at a time when many companies are making less money than they did a year ago, businessmen, accepting all these things as true, may be more than reluctant to engage in a thoroughgoing systems overhaul once more. And, they can reasonably point out, if the system which has been designed for them seems to be working well, the benefits they could get out of such a complete overhaul, even assuming there was all the money in the world available for it, would not offset the costs involved.

And, in many cases they would be right. So what the companies that have benefitted from systems revision in the past actually need is some kind of a method of checking their present procedures. Such a check would not be made with a view to redesigning all the procedures, but rather with a view to exposing weakness or inequities that have crept in, and correcting the worst of these. It is thus a checking job to see if repairs are needed rather than a major revision.

Even if a company is convinced it has the best system based on the best individual procedures in the world, it only makes sense for it to check the validity of these beliefs on some kind of periodic basis. Just as the wise investor watches and analyzes his investments on a continuous basis, so should good management watch and analyze its operating programs on a continuous basis. This is true at any time; it is only made more imperative by recession.

A beautiful ideal, perhaps, but

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OFFICE LAYOUT and FURNISHINGS

As business comes to see how much office productivity depends on good layout and furniture design, it demands—and gets—designs that are more efficient and more versatile

Designs for the changing office

THE PHYSICAL OFFICE, as well as the work flow it handles, must be efficiently planned and designed if it is to contribute to the successful operations of a business.

An office which incorporates the latest techniques in air conditioning, lighting, acoustical control and the like, presents a stimulating atmosphere for employees to work in. It is a well-known fact that the physical characteristics of an office can add to, or, conversely, subtract from the productivity of office workers in direct ratio to the extent that it provides for, or ignores, their physical and psychological comfort.

Work flow in the modern office, especially where installations of automated equipment are involved, constantly undergoes changes in operating requirements. Working arrangements, therefore, must be physically adjustable to meet these changes. And as the office itself has become more flexible, so have the furnishings which give it its character.

Furniture is now more versatile

Modular furniture, for example has come into increased popularity, particularly among large-scale corporations which, of necessity, must apportion enough space for vast departments and individual employees.

Another means of achieving flexibility is the use of folding furniture. Some of this is extremely handsome. Its use permits multi-purpose use of office space.

An increase in use of wood office furniture, especially in executive areas and conference rooms, is apparent in many of the new, pace-setting offices. Standard wood office furniture now runs the gamut from traditional to modern, from conventional to free form, from mahogany and walnut to ebony. Judicious use of these materials has added greatly to the distinctive

Business has seized happily on the idea that the office should be a "home away from home." Pleasant surroundings are combined with efficient work arrangements in this office in the new Los Angeles quarters of J. Walter Thompson Co.

quality of a number of top offices throughout the nation. Steel furniture, however, continues to hold the bulk of the market for general office use.

Lighting, ventilation and power facilities have been designed so that all are available at frequent intervals, on a modular basis. Overhead lighting fixtures, for example, are placed close enough together that partitions may be set up anywhere in the office without causing objectionable shadows. Air conditioning or ventilating outlets are stationed at close intervals to provide a constant supply of air, spread evenly in office areas.

Movable partitions serve primarily as a means of subdividing space. Some are the free-standing type, some are bolted to the floor, to each other or to the ceiling. All are designed to provide privacy of office space, and use of these units in various-sized companies is widespread.

Privacy of sound, also, is becoming an important factor in the design of offices. Numerous methods of achieving "sound conditioning" are available. Most involve acoustical treatment of walls and ceilings, using special tiles in most cases, although sprays and plasters are available for direct application.

Tiles vary greatly in pattern and material, thereby permitting a wide freedom of choice for purposes of decor. They are offered in white and off-white, as well as in colors; many tiles may be painted. Some feature metal or plastic surfaces, with a backing of sound-absorbing materials. Ceiling tiles may be affixed directly to a ceiling, or may be installed in suspended grid systems. Lighting fixtures also can be incorporated into a suspended ceiling, so that their surfaces are flush with the ceiling.

A continuing trend of several years' vintage is use of large-area light sources, including the so-called luminous ceiling. In these ceilings, panels of translucent material, usually a plastic, are suspended below batteries of fluorescent light fixtures.

Floor coverings also may feature acoustical properties. Whereas carpeting ranks as the most luxurious of floor coverings, and is superior in acoustical properties, its initial cost is higher than that of other materials. Asphalt tile, linoleum, a number of types of vinyl tiles, rubber tiles and cork very often are used to complement office decor and deaden noise, as well as to provide serviceable floor coverings—long wearing and easy to maintain.

Air conditioning, naturally, has come to be regarded as a necessity in new office buildings. Such equipment now ranges from small units, intended to be set on window sills, to enormous installations located at various points in the office building. Some units are air cooled, others water cooled. If air cooled, these units require some sort of ductwork; if water cooled, plumbing connections are necessary.

All, or most, of these features are standard and easily recognizable in a great majority of offices. As inducements to higher employee morale and accompanying higher degree of productivity, these technological advances can prove of immense benefit to all offices.

The Manufacturers

The lists below include the principal manufacturers of office desks and chairs, air conditioning equipment, floor coverings, overhead lighting fixtures, and movable partitions.

Office Desks and Chairs

The following list includes the principal manufacturers of office desks and chairs. The codes used to indicate the types of products offered are as follows:

CM—Metal chairs.
CMP—Metal chairs, posture type.
CW—Wood chairs.
CWP—Wood chairs, posture type.
DM—Metal desks, standard.
DMM—Metal desks, modular.
DW—Wood desks, standard.
DWM—Wood desks, modular.
NI — No information available at press time on current products.

The Acorn Co., 4605 W. 21st St., Chicago 50. (DM)

Ajusto Equipment Co., 515 Conneaut St., Bowling Green, Ohio. (CMP)

All-Steel Equipment Inc., 100 Griffith Ave., Aurora, Ill. (CM; CMP; DM; DMM)

Alma Desk Co., Drawer 271, High Point, N. C. (DW; DWM)

Alvin Industries, 14-104 Merchandise Mart, Chicago. (CM)

Arnot-Jamestown Div., Aetna Steel Products Corp., Jamestown, N. Y. (DM; DMM; DW; DWM)

Art Metal Construction Co., Jones & Gifford Aves., Jamestown, N. Y. (CM; CMP; DM)

Art Steel Co., Inc., 170 W. 233 St., New York 63. (CM; CMP; DM; DMM)

Automatic File & Index Co., 549 W. Washington Blvd., Chicago 6. (DM)

Barcalo Mfg. Co., 166 Chandler St., Buffalo 7, N. Y. (CW)

Barler Metal Products, Inc., 214 W. Jefferson St., Goshen, Ind. (DM)

Berger Mfg. Div., Republic Steel Corp., 1038 Belden Ave., N. E., Canton 5, Ohio. (DM)

Bevco. SEE: Precision Mfg. Co.

Blair Aluminum Furniture Co., Inc., P.O. Box 31, Marietta, Ga. (CM; CMP)

Boling Chair Co., Siler City, N. C. (CW; CWP)

Browne-Morse Co., Muskegon, Mich. (CM; CMP; DM; DMM)

The Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago 5. (CW; DW)

The Buckstaff Co., 1127 S. Main St., Oshkosh, Wis. (CW)

Carlton-Surrey, Inc., 2202 Newark St., Grand Rapids, Mich. (CW; DW; DWM)

Central Desk Mfg. Co., 454 N. Armour St., Chicago 22. (DW; DWM)

Challenger Steel Products Corp., 350 Morgan Ave., Brooklyn 6, N. Y. (DM)

The Champion Furniture Co., P.O. Box 2462, Hickory, N. C. (D—NI)

Clarin Mfg. Co., 4640 W. Harrison St., Chicago 44. (CM—including folding)

Clark & Gibby, Inc., 8 W. 40 St., New York 18. (CM; CMP; CW; CWP; DM; DMM; DW; DWM)

Cole Steel Equipment Co., Inc., 415 Madison Ave., New York 17. (CM; CMP; DM; DMM)

Columbia Steel Equipment Co., Fort Washington, Pa. (DM; DMM)

Corry-Jamestown Mfg. Corp., 44 N. Center St., Corry, Pa. (DM; DMM)

The Feldman Cowan Co., 1650 Long Beach Ave., Los Angeles 21. (CW; DWM)

Cramer Posture Chair Co., 625 Adams St., Kansas City 6, Mo. (CM; CMP)

D & L Office Furniture Co., 61 W. Hubbard St., Chicago 10. (DM; DW; DWM)

Dependable Mfg. Co., 2407 Fort Crook Rd., Bellevue, Neb. (CM; CMP)

Designcraft Metal Mfg. Corp., 155 27 St., Brooklyn 32, N. Y. (DM; DMM)

Desks of America, Inc., P.O. Box 6185, Bridgeport 6, Conn. (CMP; DW; DWM).

Dixie Chrome Products, 711 E. First St., Irving, Tex. (CM; CMP; DM)

Domore Chair Co., Inc., 2400 Sterling Ave., Elkhart, Ind. (CM; CMP)

Doro Mfg. Co., 220 W. Institute Place, Chicago 11. (D—NI)

Dorset Steel Equipment Co., 2514 W. Dauphin St., Philadelphia 32. (DM; DMM)

Doten-Dunton Desk Co., 26 Otis St., East Cambridge 4, Mass. (CW; DW; DWM)

Dunbar Furniture Corp. of Indiana, Berne, Ind. (CW; CWP; DW)

Durable Metal Products Co., 38-42 Review Ave., Long Island City, N. Y. (DM)

Emeco Corp., Maple Ave. & High St., Hanover, Pa. (CM; CMP; CW)

Empire Chair Co., Johnson City, Tenn. (C—NI)

Executive Furniture Co., 2800 Virginia St., Wichita Falls, Tex. (DW; DWM)

Feldman-Selje Design Associates, 910 E. Fourth St., Los Angeles 13. (C—NI; D—NI)

L. C. Flewelling Co., 12411 Industrial Ave., Hollydale, Calif. (D—NI; C—NI)

The Fritz-Cross Co., St. Cloud, Minn. (CM; CMP)

Garrett Tubular Products, Inc., P.O. Box 237, Garrett, Ind. (CMP)

The General Fireproofing Co., 413 Dennick Ave., Youngstown, Ohio. (CM; CMP; DM; DMM)

The Globe-Wernicke Co., Norwood, Cincinnati 12. (CM; CMP; DM; DMM)

Grand Rapids Leather Furniture Co., Inc., 201 Front St., N. W., Grand Rapids, Mich. (CW; CWP; DW)

Gregson Mfg. Co., Liberty, N. C. (C—NI)

W. H. Gunlocke Chair Co., Wayland, N. Y. (CW; CWP)

The H-O-N Co., Third & Oak Sts., Muscatine, Iowa. (DM)

Haeger Desk Co., 1663 Merchandise Mart, Chicago 54. (D—NI)

Hamilton Desk Co., High Point, N. C. (D—NI)

Hamilton Mfg. Corp., 2525 State St., Columbus, Ind. (CM; CMP)

Hanes Chair & Furniture Co., Inc., Mocksville, N. C. (C—NI; D—NI)

Harrison Steel Desk & File Co., 4718 W. Fifth Ave., Chicago 44. (DM)

The Harter Corp., 80 Prairie Ave., Sturgis, Mich. (CM; CMP)

Haskell, Inc., 303 E. Carson St., Pittsburgh 19. (DM; DMM)

Hillside Metal Products Co., 262 Passaic St., Newark 4, N. J. (DM)

Hoosier Desk Co., 310 Mill St., Jasper, Ind. (D—NI)

Howe Folding Furniture Co., 1 Park Ave., New York 16. (MI — Folding furniture)

Huntington Chair Corp., 20 St. & Second Ave., Huntington 18, W. Va. (CW; DW)

Imperial Desk Co., 1312 W. Florida St., Evansville 7, Ind. (CW; CWP; DW; DWM)

Indiana Chair Co., 13th & Vine, Jasper, Ind. (CW; CWP)

Indiana Desk Co., Inc., 1201 N. Mill St., Jasper, Ind. (DW; DWM)

Good modern office design allows for both present-day efficiency and future expansion. The placement of lighting, partitions, air conditioning, and other facilities should cater to both needs, as in the new home offices of The Greyhound Corp.

Invincible Metal Furniture Co., 842 S. 26 St., Manitowoc, Wis. (CM; CMP; DM; DMM)

J & J Tool & Machine Co., BeLA Div., 9505 S. Prairie Ave., Chicago 28. (CM—Folding)

Jasper Chair Co., Jasper, Ind. (CW; CWP)

Jasper Desk Co., Jasper, Ind. (DW; DWM)

Jasper Office Furniture Co., 13 & Vine Sts., Jasper, Ind. (DW; DWM)

Jasper Seating Co., Inc., Jasper, Ind. (CW; CWP)

The Johnson Chair Co., 7109 Merchandise Mart, Chicago 54. (CW; CWP)

Kenmar Mfg. Co., P.O. Box 230, East Palestine, Ohio. (C—NI)

The Kenwood Corp., 2412 Pennsylvania Ave., N. W., Washington 7, D. C. (DW)

King Posture Chair Co., 953 S. Raymond Ave., Pasadena 2, Calif. (C—NI)

Knoll Associates, Inc., 575 Madison Ave., New York. (CM; CW; DM; DW)

Korda Industries, 20 W. 46 St., New York 19. (DM)

Lehigh Desk Co., 106 Duane St., New York. (DW)

Lehigh Furniture Corp., 16 E. 53 St., New York 22. (CW; DW; DWM)

The Leopold Co., 914 Osborn St., Burlington, Iowa. (DW)

Macey-Fowler, Inc., 305 E. 63 St., New York 21. (CM; CMP; CW; CWP; DM; DMM; DW; DWM)

The B. L. Marble Chair Co., 89 Willis St., Bedford, Ohio. (CW; CWP)

Marny Sales Div., Rockaway Metal Products Corp., 1270 Broadway, New York 1. (DMM)

Herman Miller Furniture Co., Zeeland, Mich. (CW; CWP; DW; DWM)

Milwaukee Chair Co., 3022 W. Center St., Milwaukee 45. (CW; CWP)

Milwaukee Metal Furniture Co., 101 N. Campbell Ave., Chicago 12. (CM; CMP)

Modern Steelcraft, Inc., 230 Fifth Ave., New York. (DM)

Monarch Furniture Co., Inc., 803-807 Ward St., High Point, N. C. (CW; CWP)

Morval Corp., Herkimer, N.Y. (CW; DW)

Murphy Chair Co., Inc., 931 Wing Ave., Owensboro, Ky. (CW; CWP)

Murphy-Miller, Inc., 2103 Bluff St., Owensboro, Ky. (C—NI)

Myrtle Desk Co., P.O., Box 1750, High Point, N. C. (DW)

The National Desk Co., Inc., 88 West St., Ilion, N. Y. (D—NI)

Niagara Therapy Mfg. Corp., Adamsville, Pa. (C—with massage unit)

Niemann, Inc., 469 E. Ohio St., Chicago 11, Ill. (C—NI)

Norcor Mfg. Co., Inc., 666 Lake Shore Drive, Chicago. (CM)

Norquist Products, Inc., 415 Chandler St., Jamestown, N. Y. (CM; CW)

Northwest Metal Products Co., 1337 E. Mason St., Green Bay, Wis. (CM; CMP; DM)

Ohio Chair Co., Inc., 408 N. Meridian Rd., Youngstown, Ohio. (CM; CMP)

Old Hickory Furniture Co., Martinsville, Ind. (CW; DW)

Orna-metal, Inc., 2412 S. Seventh St., St. Louis 4. (DM; DMM)

Peerless Steel Equipment Co., 6600 Hasbrook Ave., Philadelphia 11. (M; CMP; DM; DMM)

Precision Mfg. Co., 831 Chicago Ave., Evanston, Ill. (CM; CMP)

Precision Metal Workers Corp., 3100 W. Carroll Ave., Chicago 41. (CM; CMP)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. (CM; CMP; DM; DMM)

J. K. Rishel Furniture Co., 1201 W. Third St., Williamsport 19, Pa. (DW; DWM)

Riteform Chair Co., Inc., 301 Oak St., Quincy, Ill. (CM; CMP)

Rockwell-Barnes Co., 35 E. Wacker Drive, Chicago 2. (DM)

Royal Metal Mfg. Co., 1 Park Ave., New York 16. (CM; CMP)

H. Sacks & Sons, 425 E. 53 St., New York. (DW)

Frank Scerbo & Sons, Inc., 140 Plymouth St., Brooklyn. (CW; CWP; DW; DWM)

Security Steel Equipment Corp., Avenel, N. J. (CM; CMP; DM; DMM)

The Shaw-Walker Co., Muskegon, Mich. (CM; CMP; DM; DMM)

Shelbyville Desk Co., 403 S. Noble St., Shelbyville, Ind. (DW; DWM)

Shwayder Bros., Inc., Detroit 29. (C—NI)

The Sikes Co., Inc., 20 Churchill St., Buffalo 7, N. Y. (CW; CWP)

Southern Desk Co., Hickory, N. C. (D—NI)

Standard Furniture Co., S. Washington St., Herkimer, N. Y. (CM; CMP; CW; CWP; DMM; DW; DWM)

Standard Pressed Steel Co., Box 501, Jenkintown, Pa. (CMP)

Stanley Mfg. Co., 2310 N. Main St., Fort Worth 6, Tex. (CW; CWP)

Steel Furniture Mfg. Co., 15531 Arrow Highway, Baldwin Park, Calif. (DM; DMM)

Steelcase, Inc., 1491 Division Ave. S., Grand Rapids 2, Mich. (CM; CMP; DM; DMM)

Stewart Office Furniture Co., 6520 N. Hoyne Ave., Chicago 45. (DW)

Stout Chair Co., Liberty, N. C. (C—NI)

Stow & Davis Furniture Co., 23 Summer Ave., N. W., Grand Rapids 2, Mich. (CW; CWP; DW; DWM)

The Sturgis Posture Chair Co., 154 E. Erie St., Chicago 11. (CM; CMP)

Tab Products Co., 995 Market St., San Francisco 3. (MP)

The Taylor Chair Co., Bedford, Ohio. (CW; CWP)

Thomas Furniture Co., 420 Manning St., High Point, N. C. (CW)

The Toledo Metal Furniture Co., 1100 Hastings St., Toledo 7. (CM; CMP)

Tower Suites, Inc., 21 W. Illinois St., Chicago 10. (CW; DW)

The L-shaped desk has proved to be a most efficient arrangement. This example is from the City Federal Savings & Loan Association in Elizabeth, N. J.

U. S. Chaircraft Mfg. Corp., 225 Belleville Ave., Bloomfield, N. J. (CM)

The Victor Safe & Equipment Co., Inc., 315 Fourth Ave., New York 10. (DM)

Wassell Organization, Inc., Sylvan Ave., Westport, Conn. (CMP)

Welch Industries, 8557 San Fernando Rd., Sun Valley, Calif. (same as Welch Metal Products)

Welch Metal Products, Inc., 8557 San Fernando Rd., Sun Valley, Calif. (CMP)

Wells Chair Corp., P.O. Box 230, Michigan City, Ind. (CM; CMP)

Wells Furniture Mfg. Co., Laurel, Miss. (C—NI; D—NI)

Western Mfg. Co., 532 N. Highland Ave., Aurora, Ill. (DM)

The Worden Co., 200 E. 17 St., Holland, Mich. (CW; CWP; DW; DWM)

Yawman & Erbe Mfg. Co., 1099 Jay St., Rochester 3, N. Y. (DM; DMM)

Acoustical Materials

The following list of manufacturers indicates the principal makers of acoustical products used in offices.

The following codes are used:

B—Acoustical baffles such as may be used with luminous ceilings.

H—Hoods and cabinets used to enclose office machines.

MI—Miscellaneous.

NI — No information available at press time on current products.

PS—Acoustical plasters and sprays.

SC — Suspended ceilings — i.e., grids and other structures used to support tiles, lighting fixtures, etc.

TC—Ceiling tiles and panels.

TW—Wall tiles and panels.

Accesso Systems, Inc., 4615 Eighth Ave., N. W., Seattle 7. (SC)

Armstrong Cork Co., 1010 Concord, Lancaster, Pa. (TC, TW)

Benjamin Electric Mfg. Co., Des Plaines, Ill. (B)

Burgess-Manning Co., 5970 Northwest Highway, Chicago. (SC—Including sound, light, and air conditioning fixtures)

The Celotex Corp., 120 S. LaSalle St., Chicago 3. (B; H; SC; TC)

Cupples Products Corp., 2650 S. Hanley Rd., St. Louis. (SC)

Eagle Ottawa Leather Co., P.O. Box 308, Grand Haven, Mich. (MI—Leather wall tiles)

The Flintkote Co., 30 Rockefeller Plaza, New York 20. (TC)

Gates Acoustinet Co., 1807 Elmwood Ave., Buffalo 7, N. Y. (H)

Folding furniture allows more varied use of office space. Here folding tables are set up for a conference in the Socony Mobil Building, New York.

(Picture by courtesy of Howe Folding Furniture Co.)

The Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16, Ohio (TW)

Jardin Associates, Inc., 75 Maiden Lane, New York 7. (H)

Johns-Manville, 22 E. 40 St., New York 16. (TC, TW)

Kaiser Gypsum Co., Inc., St. Helens, Ore. (MI—Insulating plank, TC, TW)

Keasbey & Mattison Co., 1955 Butler Ave., Ambler, Pa. (PS)

Luminous Ceilings, Inc., 2500 W. North Ave., Chicago 47. (B, SC—Luminous ceilings)

Marsh Wall Products, Inc., Dover, Ohio. (TW)

Mastic Tile Corp. of America, Newburgh, N. Y. (TW)

Mid West Noise Control Co., 6265 Carrolton, Indianapolis. (B — Cone-shaped)

National Gypsum Co., Inc., Baker Bldg., 325 Delaware Ave., Buffalo 2, N. Y. (PS; TC; TW)

New England Lime Co., Nelco Acoustical Tile Div., Adams, Mass. (TC; TW)

Owens-Corning Fiberglas Corp., 1833 Nicholas Bldg., Toledo 1, Ohio. (B; TC; TW)

Ruby-Philite Corp., 32-02 Queens Blvd., Long Island City 1, N. Y. (B)

F. E. Schundler & Co., Joliet, Ill. (TC; TW)

Simpson Logging Co., Shelton, Wash. (TC)

Steel Partitions, Inc., P. O. Box 807, Jamestown, N. Y. (TW)

Sylvania Electric Products Inc., 1740 Broadway, New York 19. (B)

U. S. Gypsum Co., 300 W. Adams St., Chicago 6. (TC; TW)

The Upson Co., Lockport, N. Y. (MI —Wall board)

The Wakefield Co., 731 S. Water St., Vermilion, Ohio. (B; SC—Luminous ceilings)

Watkins Industries, P. O. Box 2621, Youngstown, Ohio. (H)

Wood Conversion Co., First National Bank Bldg., St. Paul 1, Minn. (TC; TW)

Zonolite Co., 135 S. LaSalle St., Chicago 3. (PS)

Air Conditioning

The codes used in this list are as follows:

BWA—"Built-in-wall" air conditioners, air cooled.

C—Equipment for use with centralized air conditioning systems.

D—Dehumidifiers.

F—Fans and air circulators.

H—Humidifiers.

MI—Miscellaneous.

NI — No information available at press time on current products.

PA — "Packaged" air conditioners larger than room size, air cooled.

PW — "Packaged" air conditioners larger than room size, water cooled.

RCA—Room size console air conditioners, air cooled.

RCW—Room size console air conditioners, water cooled.

WA—Window type air conditioners, air cooled.

Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica 32, N. Y. (D; H)

Admiral Corp., 3800 W. Cortland St., Chicago 47. (BWA; D; WA)

Air Controls, Inc., 2310 Superior Ave., Cleveland 14. (F)

Airtemp Div. SEE: Chrysler Corp.

Amana Refrigerator, Inc., Amana, Iowa. (BWA; D; PA; WA)

Looking efficient is part of being efficient . . .

American Blower, Div. of American Standard, Detroit 32. (C; F; PA; PW)

Amic Mfg. Corp., 21-25 44th Ave., Long Island City 1, N. Y. (BWA; WA)

Argus Mfg. Corp., 1134 N. Kilbourn Ave., Chicago 51. (F)

Bar-Brook Mfg. Co., 6133 Linwood Ave., Shreveport, La. (F)

Bryant Mfg. Co., 2020 Montcalm St., Indianapolis 7. (C; PA; PW)

Carrier Corp., 300 S. Geddes St., Syracuse 1, N. Y. (C; PA; PW; RCA; RCW; WA)

Chelsea Fan & Blower Co., Inc., 639 South Ave., Plainfield, N. J. (F)

Chrysler Corp., Airtemp Div., 1600 Webster St., Dayton 1, Ohio. (BW; C; PA; PW; WA)

Circle-Air Industries, 244 Herkimer St., Brooklyn 16, N. Y. (C)

The Coleman Co., Inc., 250 N. St. Francis, Wichita, Kansas. (C; PA; PW)

Commander Mfg. Co., 4225 W. Kinzie St., Chicago. (F)

Cory Corp. SEE: Fresh'nd Aire Co.

Crosley Div., Avco Mfg. Co., 1329 Arlington Ave., Cincinnati. (WA)

Curtis Mfg. Co., 1905 Kienlen Ave., St. Louis 20. (C; PA; PW)

Dayton Electric Mfg. Co., 126 S. Oakley Blvd., Chicago 12. (F)

The Deering Air Conditioning Co., 1069 Celestial St., Cincinnati. (BWA; WA)

Diehl Mfg. Co., Finderne Ave., Somerville, N. J. (F)

Drayer-Hanson, Inc., 3301 Medford St., Los Angeles 63. (C; PA; PW)

Dryomatic Corp., Alexandria, Va. (D)

The Ebco Mfg. Co., 265 N. Hamilton Rd., Columbus 13, Ohio. (D)

The Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis 21 (F; WA)

Emerson Radio & Phonograph Corp., 14th & Coles St., Jersey City, N. J. (WA)

Fasco Industries, Inc., Davis & Toppin Sts., Rochester 2, N. Y. (F)

Fedders-Quigan Corp., Maspeth 78, N. Y. (BWA; D; PA; WA)

Fresh'nd-Aire Co., Div. of Cory Corp., 221 N. LaSalle St., Chicago 1. (C; F; PA; PW; WA)

Friedrich Refrigerators, Inc., 1117 E. Commerce St., San Antonio 3. (PA; PW; WA)

Frigid, Inc., 128-168 32nd St., Brooklyn 32, N. Y. (F)

Frigidaire. SEE: General Motors Corp.

General Electric Co., Air Conditioning Div., 5 Lawrence St., Bloomfield, N. J. (PA; PW; WA)

General Motors Corp., Frigidaire Div., 300 Taylor St., Dayton 1, Ohio. (D; PA; PW; WA)

Gibson Refrigerator Co., 515 Williams St., Greenville, Mich. (BWA; PA; PW; WA)

The A. C. Gilbert Co., Erector Square, New Haven 6, Conn. (F.)

Goodwill Mfg. Co., 1215 S. 52nd Ave., Cicero 50, Ill. (F)

Hunter Fan & Ventilating Co., 390 S. Front St., Memphis 2, Tenn. (F; WA)

I. W. Air Conditioning Corp., 230 Manida St., New York 59. (BWA; WA)

Ilg Electric Ventilating Co., 2850 N. Pulaski Rd., Chicago 41. (BWA; F; PA; RCA; RCW; WA)

Kelvinator Div., American Motors Corp., 2051 W. Fort, Detroit 32. (BWA; D; WA)

Kisco Co., Inc., 2400-40 DeKalb, St. Louis 4. (F)

Lasko Metal Products, West Chester, Pa. (F)

The Lau Blower Co., 2001 Home Ave., Dayton 7, Ohio. (F)

LeJohn Mfg. Co., 111 22 St., Huntington, W. Va. (F)

Lewyt Air Conditioner Corp., 43-22 Queens St., Long Island City, N. Y. (BWA)

Manning-Bowman Div., McGraw Electric Co., Elgin, Ill. (F)

Mitchell Mfg. Co., Div. of Cory Corp., 3200 W. Peterson Ave., Chicago. (BWA; C; D; PA; PW; WA)

Perfection Industries, Div. of Hupp Corp., 7609 Platt Ave., Cleveland 4. (C; PA; PW)

Philco Corp., Tioga & C Sts., Philadelphia 34. (BWA; PA; RCA; WA)

Radex Corp., 2076 Elston Ave., Chicago 14. (MI—Air purifiers)

Radio Corp. of America. SEE: Whirlpool-Seeger Corp.

Reed-Unit Fans, Inc., 1001 St. Charles Ave., New Orleans. (F)

Remington Corp., Air Conditioning Div., Willey St., Auburn, N. Y. (C; D; RCA; RCW; WA)

Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago 29. (C; WA)

Phil Rich Fan Mfg. Co., Inc.; 2900 Caroline, Houston 4, Texas. (F)

Robbins & Myers, Inc., Fan Div., 2456 Frisco Ave., Memphis 14, Tenn. (F)

Seabreeze-America Ltd., 701 Seneca St., Buffalo. (F)

Servel, Inc., 119 N. Morton Ave., Evansville 20, Ind. (C)

Shana Mfg. Co., 188 W. Randolph St., Chicago 1. (PA; PW)

Signal Electric Div., King-Seeley Corp., 1823 Thirteenth St., Menominee, Mich. (F)

Spitzka Mfg. Co., 235 Colfax St., N. Sacramento, Calif. (H, MI — portable evaporation-type spot coolers)

Stratfield Co., 434 Grand St., Bridgeport, Conn. (F)

Superior Electric Products Corp., 1507-17 Independence St., Cape Girardeau, Mo. (F)

The O. A. Sutton Corp., 1812 W. Second St., Wichita 1, Kans. (BWA; C; F; PA; WA)

The Trane Co., La Crosse, Wis. (C; F; PA; PW; RCA; RCW)

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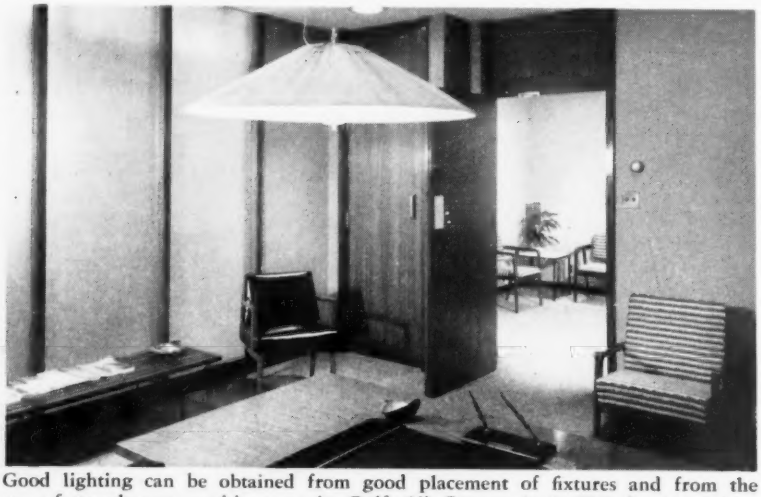


Good lighting can be obtained from good placement of fixtures and from the use of translucent partitions, as in Gulf Oil Corporation's Philadelphia offices.

Office Management's
Eighth Annual

"Office of the Year" Awards

In the following pages, *Office Management* presents in text and pictures the six new offices which have won its "Office of the Year" Awards for 1957. Awards are given in two categories—to offices designed for 300 or more employees, and offices designed for fewer than that number. Basis of the editorial board's selection is a survey taken among members of the American Institute of Architects and the Association of Consulting Management Engineers known for their particular interest in the office.

WITHIN itself the new headquarters of The Mutual Benefit Life Insurance Company of Newark, New Jersey, exemplifies all that is best in the modern office. It has established good modern working conditions in a handsome setting, but it has not forgotten that the office is a place where work is to be accomplished, that its main purposes should not be compromised by a sacrifice of function and utility to the merely decorative. These offices prove again that the best design is the design which derives its beauty from its adherence to function.

In its choice of location no less than in its appearance, Mutual Benefit has proved itself the outstanding large office of 1957. Mutual Benefit, by its decision to remain in downtown Newark, rather than move to some outlying area, has sparked a renaissance of the central business area of its home city. Mutual Benefit, thus, has not only proved itself, through its new offices, a foresighted and imaginative office operation; it has also proved itself an outstanding civic leader in its own community, an organization which is giving new life and vitality to that community.

Office of the Year Award

(for offices designed for 300 or more employees)

The Mutual Benefit Life Insurance Company

Newark, N. J.

by Frederick Vogel

APART from reflecting the 113-year-old company's past achievements and its promise for the future, the new top award-winning home office building of The Mutual Benefit Life Insurance Company combines the all-impressive elements of beauty and dignity with all-important efficiency and economy. Lavishness has been sacrificed for a quiet, subdued grandeur, and startling effects for an overall integrated pattern of color coordination and design.

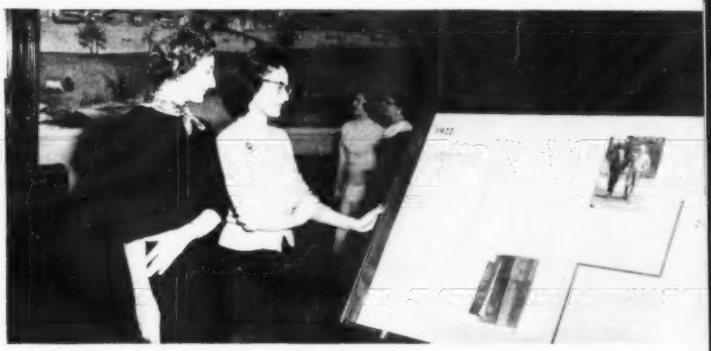
Situated in the Washington Park area of downtown Newark, N. J., the new construction is actually a keystone in the proposed building pattern of a revitalized, "new" Newark. The 20-story home office building is only one structure in the company's plans for a huge $20-million project, which will encompass an adjacent six-story office building for rental purposes, a three-level parking garage — probably the largest on the East Coast — and a fourth building, a second six-story office building. The first two buildings are completed; the latter two are rapidly nearing completion.

Representing the sixth move in Mutual's history, the new headquarters building, for which Eggers & Higgins,

Dignity and informality are combined in modern treatment of office areas; wall-to-wall carpeting, harmonizing color tones add warmth

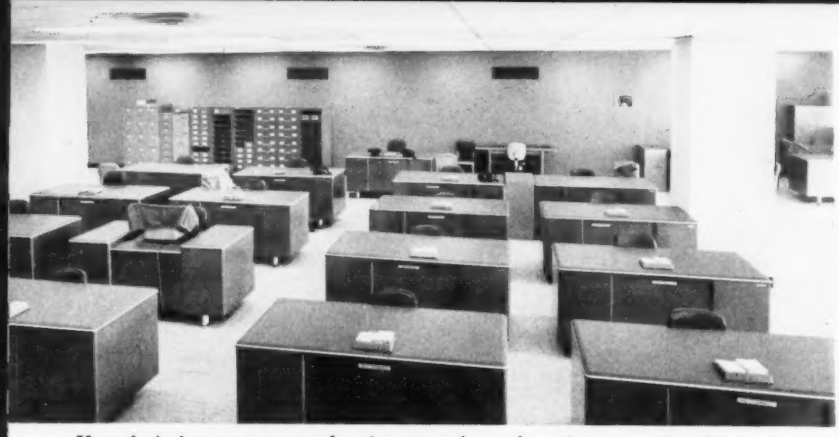
Efficiently-designed executive offices present dramatic studies in functional layout, tasteful furnishings

Editor Robert M. Smith (left), and Theodore J. Young of Eggers & Higgins hold plaque, while Mutual's Vice President Milford A. Vieser and President H. Bruce Palmer look on



Fifth floor Heritage Room contains documents, pictures and other objects of historical importance to company

Electronic Business Machines Department has unique elevated floor construction to permit free movement of machines within the department; equipment is specially air conditioned 24 hours a day, all year round, to maintain efficient operation.



Vast clerical areas accommodate large numbers of employees comfortably

Efficient Central Records Department houses stacks of company files

New York, served as architect, rises 270 feet above street level and contains a total floor space of 485,000 square feet. Its exterior is of Alabama limestone and blue-green, glare-reducing glass framed in aluminum and stainless steel.

The main floor lobby, heightened by extensive use of marble, is friendly and inviting, presenting a dramatic reception to the building. Large expanses of Pyrenees black and Vermont white, accented by vertical strips of stainless steel, rise from floor to ceiling. Natural greens grow in planter boxes along the base of the walls, bringing to the interior a trace of the outdoors. The white marble floor is bordered by a base of black Belgian marble, while three giant circular dome lights in combination with many smaller fixtures make this area daylight bright.

Modern treatment of office areas on the first floor is enhanced by inclusion of the latest decorator-type office furniture. Desks have walnut Formica tops supported by black metal frames; custom-designed chairs are walnut with persimmon Scotch leather upholstery. Floors are covered with sturdy wall-to-wall carpeting, walls are painted in a warm sand tone and columns covered with harmonizing beige and black covering.

Mail room includes modern facilities to speed communications . . .

. . . auditorium seats 800 persons

Design of large office floors is of the modular type. This plan allows for maximum flexibility in the movement of office partitions and utilities to fit changing needs. Private offices and conference rooms are constructed of movable steel and glass partitions. Floors are covered with rubber or vinyl tile. Walls are painted in harmonious colors or covered with washable wall coverings, and each floor features its own distinctive color scheme. Sound is deadened through use of acoustical ceiling tile, and lighting provided by recessed fluorescent fixtures. During selection of these fixtures, emphasis was placed on lighting which would reduce eyestrain to a minimum and at the same time provide maximum intensity.

Of particular interest is the fourth floor cafeteria, where employees and tenants are served their noonday meal in attractive and comfortable surroundings. (Mutual occupies 12 levels of the building, with other floors rented to outside firms of national reputation). The dining area is set off from the elevator corridor by a long, clear-glass wall. Entrance is through glass doors, banked on each side by live greens.

The 500-seat dining room is separated from the serving area by frosted

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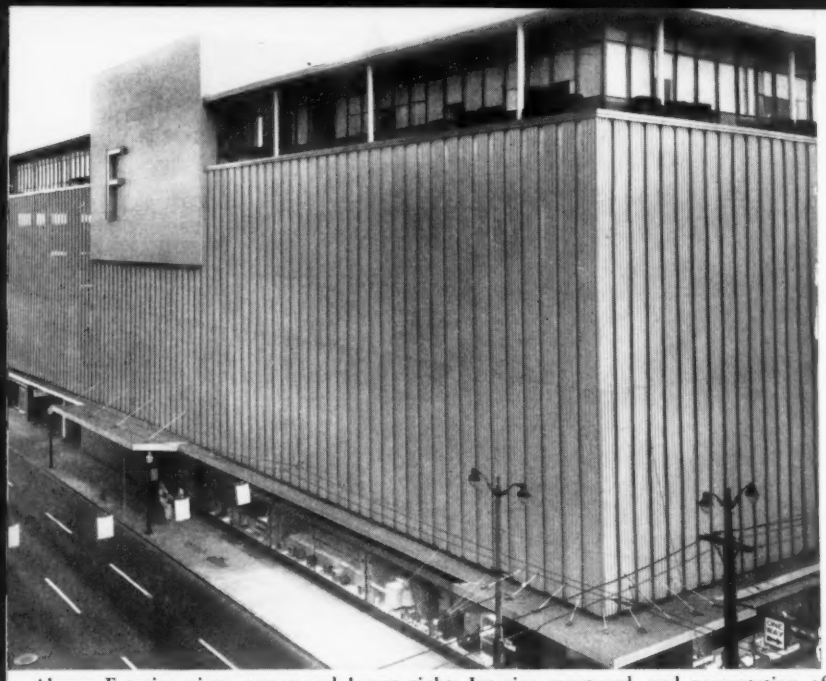
Butternut wood paneling, framed plexiglas squares cover board room walls

Infirmary and medical laboratory offer x-rays, physical examinations

Cafeteria features mirrored columns, clear-glass wall and doors, abundance of live greens



Above: Exterior view; upper and lower right: Interior courtyard, and presentation of award to President Ralph Lazarus

Federated Department Stores, *Cincinnati, Ohio*

Office of the Year Award

(for offices designed for up to 300 employees)

CINCINNATI, OHIO, is, in most respects, a conventional city. Located at the juncture of Ohio, Indiana, and Kentucky, it exemplifies in many ways the traditional values of both the South and the Midwest. But it has one individual characteristic which is peculiarly Cincinnatian. It likes to place structures on top of garages. Thus one of the city's newest and most luxurious hotels is built on top of an eight-story garage, and the city's most striking and imaginative new office, the headquarters of Federated Department Stores, also is found in a recessed penthouse atop a downtown garage.

This is not so sharp a contrast in decor and purpose as it sounds. When Federated decided to move from its former crowded quarters, it decided also that its headquarters should be located as close as possible to one of its major department stores. The Federated store in Cincinnati was Shillito's, which was finding its then current parking arrangements for customers inadequate. So it was decided to kill two birds with one stone by combining the headquarters office with new parking facilities for Shillito customers in an area immediately adjacent to the store.

The result, designed by the Cincinnati firm of Potter, Tyler, Martin and Roth, is a handsome, block-long building, the garage portion of which is encased in fluted aluminum sheets relieved by polished granite, and glass mosaics. Atop the blank walled garage are the glass walled Federated offices. Express elevators take visitors from the ground floor lobby directly to the office reception desk without sight or sound of exhaust or tail fin.

As one leaves the elevator at the penthouse, he faces a reception desk and switchboard backed by a free-standing mosaic screen. To his right clear glass walls framing massive walnut doors show him a rich and handsome reception area; to his left a corridor leads to the personnel, advertising, and public relations department

Already one of the outstanding characteristics of the Federated Offices has been revealed, its intelligent use of layout to insure that vistors from the outside will find the departments which deal most with visitors immediately ac-

REPRESENTING a stimulating infusion of the ideas of men trained primarily in the field of department store layout and design into the world of the office, the new headquarters of Federated Department Stores in Cincinnati, Ohio, emerges as an outstanding achievement in terms both of efficiency and appearance. In every respect, these offices represent the best and most modern thinking in office layout and design; in many significant details, the enriching effect of ideas born of experience in another field is apparent. Federated Department Stores is to be congratulated both on its handsome new offices, and on the imagination and skill of its own planning staff which played so important a role in the layout and design of those offices.

Comfortable office of Fred Lazarus, Jr., chairman of the board, features curtained window walls

cessible, but will still not have to interrupt or go through departments which are mostly self-contained. Thus, the mosaic screen behind the reception desk actually conceals a central corridor leading directly back to the rear offices where the departmental work is accomplished, but the two corridors apparent to the visitor lead directly to those top executive offices, and general external relations departments where most visitors would be bound.

This has all been achieved on a one floor plan served by only one bank of elevators by the intelligent placement of peripheral corridors, and central bisecting corridor within a rectangular shape. The fact that two interior patio courts are found in the Federated plan has made it posible for offices on the inner side of the peripheral corridors to have both daylight and a pleasant view, since they all have window space on the patios. Thus, nearly every office area in the entire penthouse has some windows on the outside, and benefits to some extent from natural light.

The general air of lightness and grace is aided by the many original paintings that decorate both private and general offices. Many of these are the property of the Lazarus family, art collectors all, who founded the Federated chain, and still furnish most of its principal officers. Others are on loan from the Cincinnati Art Museum and the Contemporary Art Museum of Cincinnati.

The reception area strikes this recurrent keynote immediately with striking modern paintings that relieve the simple dignity of its wood paneled walls. Modern furniture, rich in texture and material, simple in design, completes the handsome room. Walls here are of recessed walnut paneling with narrow

General offices, grouped along rear wall of penthouse, house brightly-colored modular desk units

Harmonizing natural brick and beige grasscloth highlight executive lounge

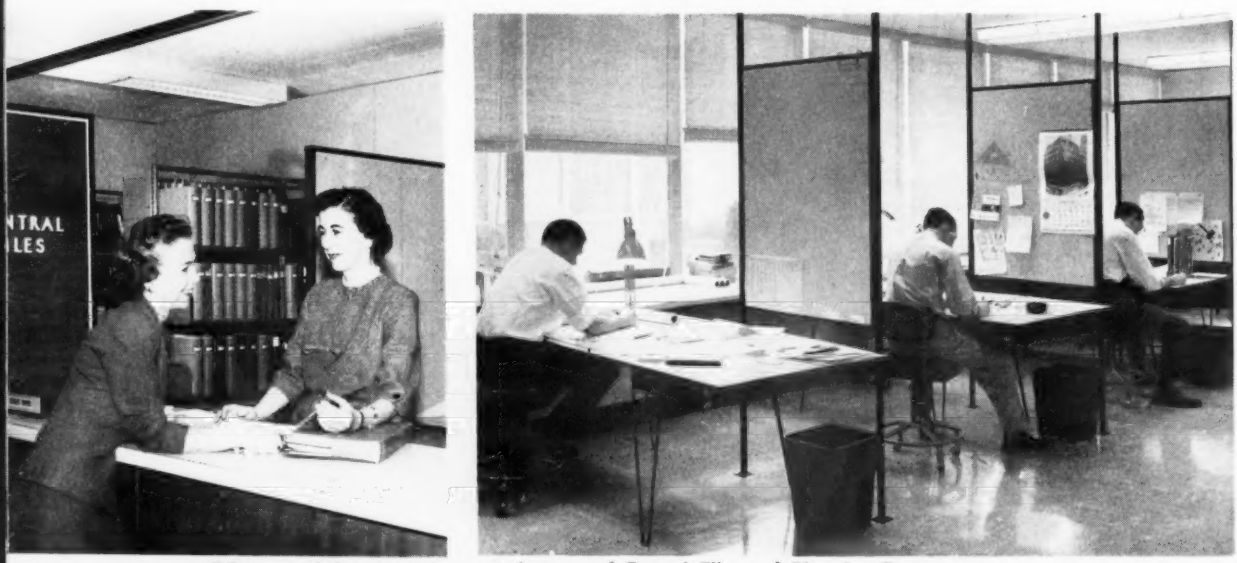
Modern, glamorous furnishings give dignity to office of President Lazarus

ebony dividing strips, and the dark walls are further accented by a beige rug.

From the visitors area, a corridor leads back through the private office areas, which were designed, as was the reception area, by Raymond Loewy Associates. Private offices of the top executives of the chain occupy one side of this corridor, while on the interior side, with windows opening onto one of the patio courts, their secretaries share smaller offices. The corridor makes a right angle turn at the penthouse wall, leads through a smaller lounge area, and then opens directly into one of the major departments of the office-research. Thus, Research again is insulated from casual visitors, easily accessible to company officers.

While the main note struck in the executive offices is restrained dignity, the general offices which are grouped along the rear wall of the penthouse are distinguished chiefly by their bright and airy look—an appearance which is heightened by the fact that the modern modular clerical desks have bases and pedestals in various bright colors. The use of exposed brick walls as contrast to regular wall textures also serves to brighten the office areas.

An unusual note in many of the general office areas is the use of pegboard for partitions which allows shelves to be hung directly over desks. In this, as in many other characteristics of this office, the fact is apparent that Federated's planning staff, which usually devotes its time to planning revisions, and additions to the various stores in the



Efficient and functional layout is keynote of Central Files and Planning Department

chain, was the prime mover in the design and layout of the general office areas.

But the skill and imagination the planning staff, headed by Charles Wiedemer, have brought to the office areas are worth imitation by office planners of a more orthodox cast. Pegboard is used with ingenuity throughout the offices, as is color-keying to designate various departments. This with the constant blending of differing walls surfaces and materials, and the tasteful arrangement of pictures, gives the offices a pleasing variety which adds to their attractiveness. And the ingenious placement of departments, permitting a smooth and direct work flow pattern, with a minimum of traffic or backtracking of papers, is also the planning staff's work.

Executive offices off the general office area have rippled glass floor-to-ceiling partitions with walnut doors, thus giving the executives privacy, but still lending the interior office the benefits of daylight on two sides (since the green interior courts also give clerical offices daylight as well as a pleasant view.)

All general office areas as well as executive offices are carpeted in tones that harmonize with the furnishings.

The rich note struck in the executive offices opening off the reception area is echoed in the board room and executive dining room. Both are located on one of the interior courts. The board room features a 26-foot oiled walnut board

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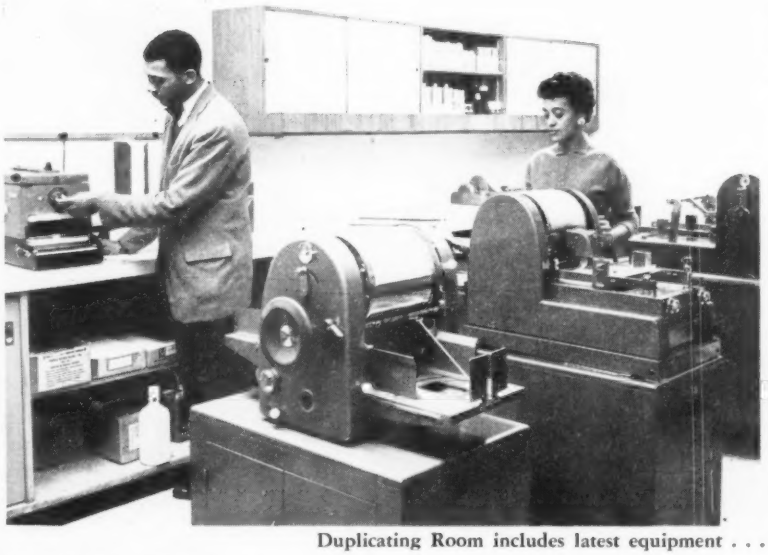
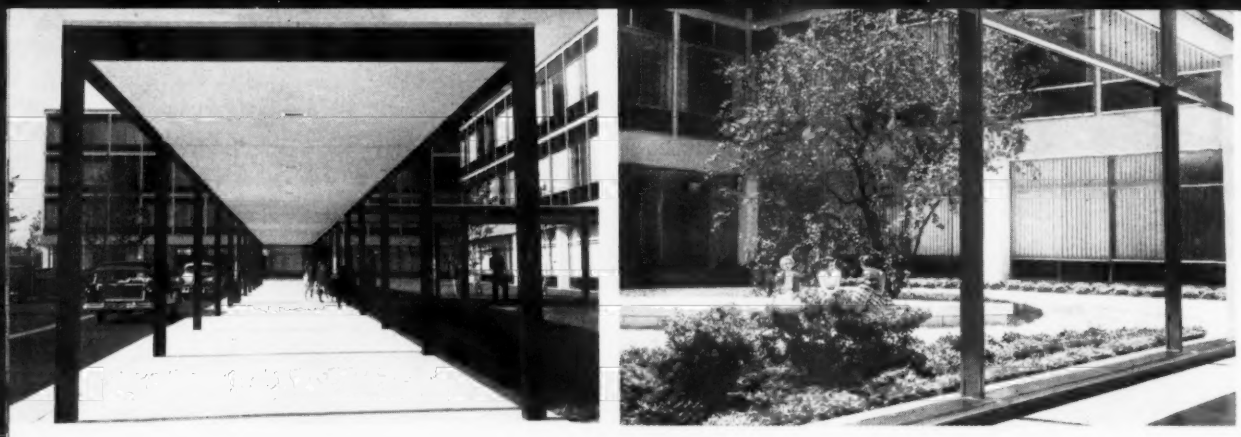
Pleasant executives' general dining room faces inner courtyard

Boat-shaped, oiled finished walnut table dominates board room



Duplicating Room includes latest equipment . . .

. . . as do cheerful secretarial areas



Open entrance way (upper left), landscaped courtyards, bring rustic setting to interior areas

Connecticut General Life Insurance Company

Hartford, Conn.

Office of the Year Award of Merit

(for offices designed for 300 or more employees)

THE EXTENSIVE GROUNDWORK required to formulate plans for construction of a large office building is, of necessity, one of the most important factors contributing to eventual success of the project. Complete and accurate evaluation of a company's present and future needs must be programmed before the office areas are embodied in concrete and stone.

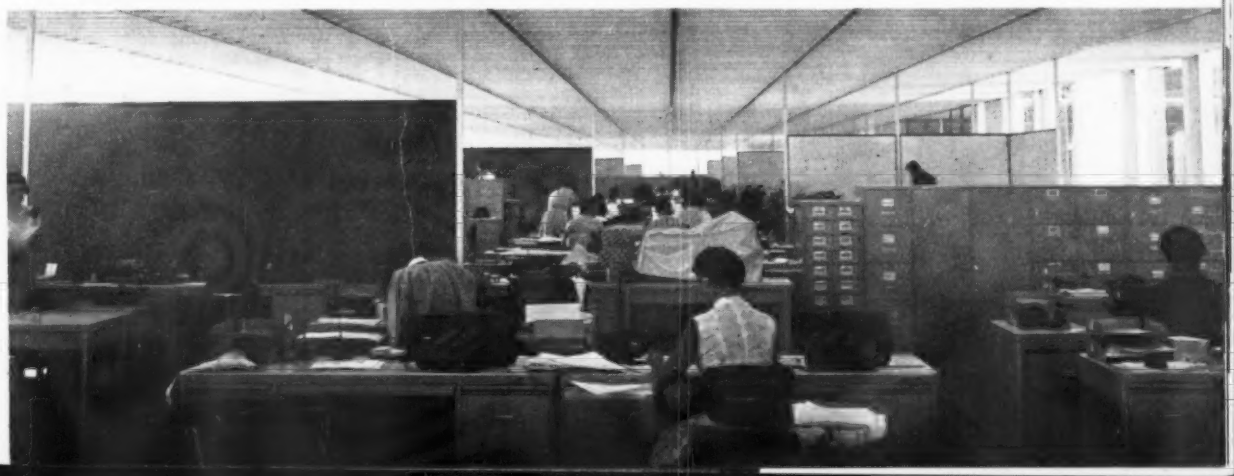
This, then, is the story behind construction of the new suburban headquarters of the Connecticut General Life Insurance Company, a story which revolves around two main characters—forethought and teamwork—and unfolds a denouement which emphasizes the importance of coordination of effort and careful attention to detail.

The insurance company's new building, opened last year in Bloomfield, a suburb of Hartford, Connecticut, is the result of extensive planning, a team approach among owner, architect and builder, and determination by all to provide answers to company space problems. Actually, plans for the move passed beyond the discussion stage as early as 1947, when Connecticut General launched a study which indicated that its present quarters would become insufficient to accommodate operations within ten years.

Several years later, President Frazar B. Wilde announced plans for a new home office. The following year, Dr. Walter C. Voss, renowned consultant in building construction and materials, was engaged by the company. A parcel of land in Bloomfield, adjacent to 200 acres already owned by the company, was purchased. In June 1954, preliminary plans and cost estimates were submitted to the board of directors. Theodore Conrad, architectural model maker, constructed a scale model of the pro-

Dictating needs are handled by telephone dictation system, fed into Central Transcribing Department

Typical work areas feature baffle ceilings, extensive use of partitions and files for flexibility



Company library offers current best sellers and periodicals

Mobile unit speeds inter-departmental distribution of mail

posed new building. Architects Skidmore, Owings and Merrill suggested erection of a temporary $100,000 two-story mockup building, 60 by 72 feet, which would represent a typical working area. This "pilot" building was studied carefully, and tests made to assure that correct design measurements and details would be incorporated into the finished plant. In the Spring of 1957, employees and equipment were transferred from downtown Hartford to their sparkling and impressive new home, surrounded by 268 acres of rustic, New England countryside. The new home office now accommodates 2000 persons, and can be converted easily to hold an additional 1000.

Interior design of the building is the result of intensive studies and collaboration among architect, Connecticut General's building committees and Mrs. Florence Knoll, director of Knoll Planning Unit, Knoll Associates Inc., New York. Briefly, major objectives were four-fold: To create efficient, flexible and pleasant working areas in a building designed to house 3000 persons; to design the interiors as an integral part of the architecture, guided by the overall architectural plan; to maintain a feeling of totality and bring about a prevailing friendliness and intimacy throughout the vast space; and to achieve this effect with clarity and beauty, and as simply as possible.

Two definite, related color schemes

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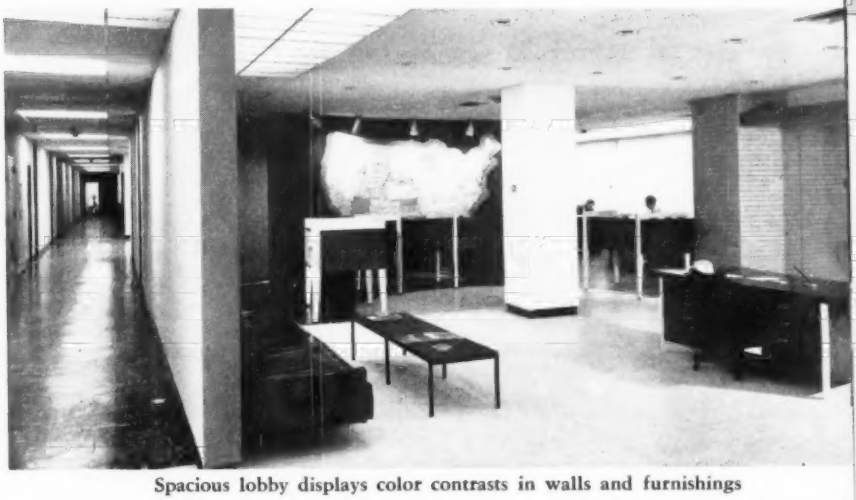
Ample employee facilities include 800-seat cafeteria overlooking artificial lake and grounds, tennis courts and other outdoor recreational areas, and completely-equipped medical service department and laboratory

Office of the Year Award of Merit

(for offices designed for 300 or more employees)

New split T-shaped office features porcelain enamel panels on facade



Spacious lobby displays color contrasts in walls and furnishings

Gulf Oil Corporation

Philadelphia Sales Division, Philadelphia, Pa.

THE CLERICAL SHORTAGE, according to F. N. Stiteler, manager of employee relations for Gulf Oil Corporation's new Philadelphia Sales Division office, is not one of his firm's major problems.

Mr. Stiteler continues that the Division hasn't even had to advertise for the office girls who will man — or, more properly, wo-man—the various departments. Except for hard-to-find experienced machine operators, female applicants keep seeking the employment office to focus the attention of Gulf's hiring agents on their skills and willingness to work in the new four-story aluminum- and glass-walled building. All this, regardless of the fact that the Division's headquarters is a 20-minute drive from downtown Philadelphia.

The reasons behind this mass move-

Modular furniture arrangements are grouped in the general office area

Handsome executive office is richly carpeted, features attractive Fiberglas draperies

ment, in the face of a nationwide labor shortage, are not too hard to fathom after an investigation of the plant itself. One of the largest suburban office buildings constructed in Greater Philadelphia, the Division's offices are prime examples of architectural beauty and functional layout.

The split T-shaped building—which features four horizontal tiers in vivid orange to recall Gulf's well-known color emblem—is set on a six-acre tract overlooking the Schuylkill River. Office space totals 133,000 square feet, enabling about 600 employees to carry on the company's sales operations in Pennsylvania, Delaware, Maryland, Virginia, West Virginia and the District of Columbia in a comfortable, relaxed atmosphere.

Divided into two units, or wings, separated by a glass-enclosed breezeway around which the building is designed, the new headquarters building was planned to permit close coordination of inter-related departments. A survey of work flow, conducted prior to construction, established the need for a horizontal, rather than a vertical layout to insure a natural progress of work from department to department and to facilitate inter-departmental communications.

The ground level, extending from the base of the site's slope, contains a covered garden area, created by extension of the three levels of the building which, incidentally, are set on stilts. Dramatic features of the design are sheer glass

Extensive pneumatic tube system . . .

. . . comfortable staff dining room are other highlights

Tabulating Department includes latest equipment to speed company operations

walls which extend from the penthouse to the ground, closing in the stair well which connects the two major units. A "Mondrian-type" painting has been created by the unique design of the facade. This multi-colored effect is achieved by a series of porcelain enamel panels set on the building's spandrels. The west side of the structure is faced with movable vertical louvers, painted off-white. The brilliant color patterns on the spandrels are visible through these louvers. All end walls are finished in white glazed masonry panels.

Executive offices on the fourth floor, beautifully yet simply designed, are walnut-paneled with walnut desks. Five staff offices are grouped around a central conference room. Each of these offices is individually styled and entered into through a matching secretary's office. This area also houses offices for the administrative assistant and visiting management in addition to a reception lounge. L-shaped desks are used generally throughout, providing extra space, greater freedom of movement and efficient work units. Basic color scheme of the furniture is two-tone grey, which blends harmoniously with the various pastel shades used on office walls. Together, furniture and wall color combinations enhance the relaxed setting. All metal partitions are movable, allowing fixed space to be adapted to changing needs.

Conference rooms have been placed where they can be used to greatest ad-

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Brightly-furnished cafeteria serves 600 employees . . .

. . . pantry adjoins conference area

Views of company's exterior and (below) reception room and vestibule

Office of the Year Award of Merit

(for offices designed for up to 300 employees)

The Greyhound Corporation

Niles, Illinois

Vice President-General Manager Donald McAllister awards plaque to Greyhound Vice President Robert W. Rebney

Mr. McAllister displays architect's certificate to Skidmore's John H. Schruben (left), James W. Hammond

WHY should a company, particularly one that enjoys nationwide prominence, move its offices from the heart of a great city to the suburbs?

To gain additional space to house all departments adequately and — even more important — to allow for future expansion? To consolidate all operating divisions in a single structure? To allow for horizontal-type work flow, as opposed to the vertical-like procedure typical of skyscraper offices? To escape the congestion of metropolitan downtown areas? To offer management and employees alike a relaxing atmosphere to work in?

Whatever the reasoning behind the move, the new suburban office is expected to answer all a company's needs — those operating requirements which the city, management feels, cannot meet or, at best, only after extensive and costly alteration.

Greyhound Corporation's decision to construct a new one-level office building in suburban Chicago was made after a 25-year tenure in a Loop skyscraper. During this period, its headquarters group had expanded to the point where departments were scattered over seven different floors. Even frequent and thorough overhauling could not provide the firm with the completely efficient layout it desired.

With this past history in mind, Erle Webster, Greyhound's staff architect, worked with Skidmore, Owings & Merrill, New York architectural-engineering firm, in developing the new building in Niles, Illinois. Quite naturally, this planning resulted in creation of a one-level structure, specifically de-

President Arthur S. Genet sits at round table-desk, placed in his office to express informality

Typical private office overlooks central courtyard

Partitions enclose semi-private areas

Honor Easton Webster's interior design gives modern look to offices, complements architectural format

Clerical department features modern furnishings, equipment

Warm-toned Korina panels blend with beige carpet in conference room

signed for maximum flexibility in interior arrangement and adequate provision for future expansion.

In the case of Greyhound, these provisions for expansion of both the building and employee parking area are permitted by the exterior wall construction, which allows for complete re-use of existing materials, should future growth dictate such enlargement of facilities. These materials, of aluminum and plate glass panels, conform to the five-foot module on which the entire plan is based. Use of this modular layout also adds to the flexibility of interior layout, where movable partitions are constructed of standard-size panels that may be combined to provide new office divisions at multiples of five feet. For the sake of even greater flexibility (as well as of economy in air conditioning installations), most movable partitions are terminated at door height.

Private offices, which feature full-height partitions, are grouped around a landscaped courtyard in the center of the building, permitting their occupants to enjoy an unobstructed view of the open areas around the perimeter of the structure. Continuous window-walls are protected against the transmission of heat and glare of the sun by use of grey plate glass, combined with draperies in private offices and vertical blinds in all other areas.

The architectural design is distinguished by a carefully studied simplicity in which the structural framework is emphasized by exposure of all steel members. These members, then, simu-

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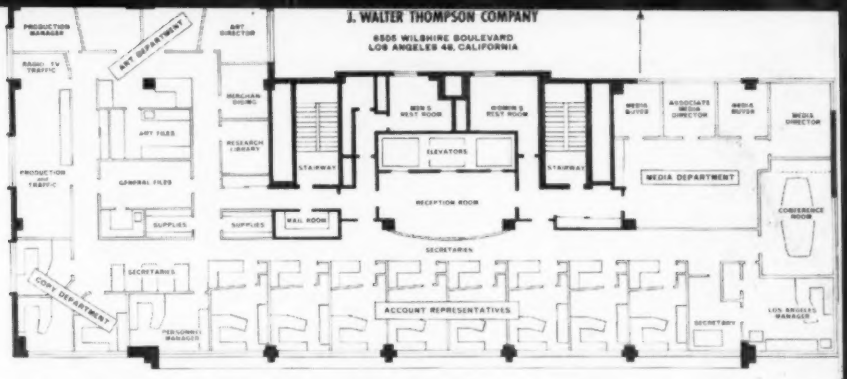
Cheerful lunch room has light grey walls, accented by blue brick planter

Office of the Year
Award of Merit

(for offices designed for up to 300 employees)



A typical floor plan of company's new suite of offices . . .

J. Walter Thompson Co.

Los Angeles, Cal.

THE J. WALTER THOMPSON organization, which services some of the largest accounts in the advertising world, recently opened comfortable new West Coast offices in the exciting City of Glamour, and in so doing presented Los Angeles with a sparkling (and efficiently planned) suite of offices of which both city and company are proud.

Housed on three floors of a 13-story office building on famed Wilshire Boulevard, the new branch office incorporates the Los Angeles and Hollywood headquarters of the international ad agency.

Of considerable importance to the architect, Leo P. Raffaelli, A. I. A., was development of large office areas which would combine private offices and spacious clerical areas. Each of 65 executive suites would be designed to satisfy individual requirements as to desks, cabinetry and seating facilities; secretarial areas would be located adjacent to these offices. The typical floor plan, in accordance with this outline, follows this pattern:

Elevators open into a large reception area. To the right of this room, contained in their own cubicles, are the mail room, supply rooms and general file area. Continuing along the outer perimeter of offices, we enter the offices of specialized departments. On this particular floor, the Art Department, divided into various component offices in the north wing, is grouped together, with allied departments in close proximity. The art director and production

. . . housed in Wilshire Blvd. building

Modern styling distinguishes office of Vice President Tom R. Cooper

Mr. McAllister and Tom R. Cooper, the officer in charge, hold award

Brilliantly-illuminated executive office combines spaciousness with attractive furnishings

These banks of storage cabinets "partition" secretarial areas

Modern and comfortable quarters have been provided for private secretaries, and placed adjacent to individual executive suites

Associated activities are grouped togetner in the Art Department . . .

. . . with art director in private area

Modern kitchenette, built-in television and hi-fi equipment, conference room are conveniently located

manager have their offices at opposite ends of the area. Between these two offices lies the Art Department, surrounded by the Art Files Department, research library, Merchandising Department, and the radio-television traffic and production and traffic departments.

South of this enclosure is the Copy Department. It occupies the west corner of the floor, with one portion reserved for secretarial use. Immediately to the left are grouped the private offices of account representatives. These offices, as well as the clerical contingent, are lined across the exterior walls of the floor. At opposite ends are situated top management offices — in this case, the personnel manager's and Los Angeles manager's offices. A secretary's office adjoins the Los Angeles manager's.

Next to this latter office is situated a large conference room, and to the north of this the Media Department. Once again, associated offices are grouped for convenience. Offices of the media buyers, associate media director and media director complete this alignment of related work areas.

Every office features its own thermostatic control for perfect year-round comfort. Modern lighting of the glare-free fluorescent type, and acoustically-treated ceilings are used throughout, with the single exception of one conference room in which the entire ceiling is an air fed and exhaust grill.

Each of the three smartly-styled reception rooms harmonizes subtle color patterns to present an impressive and warm atmosphere to guests. Centered at the mid-point of each floor, the rooms lead into the heart of activity which surrounds them on three sides.

Each private secretary has her own individual office, while handsomely-paneled partitions give added privacy to each executive office. Built-in desks and cabinets in Scandinavia Modern combine efficiency with pleasing appearance. Decorator-type lamps and chairs and sofas highlight these offices.

The unusually attractive floor layout features outstanding views of the city from each executive suite. Maximum window areas are provided, and draperies and Flexalum (heat-reflecting)

Employees' coffee room offers pleasant view of Los Angeles

aluminum blinds complement the color schemes of the furnishing. The restful color used in draperies also blends with the fabric and rug colors used in each suite.

Closed paneling at one end of the conference rooms reveals, when opened, a television film commercial projector, television screen, high fidelity system and recorder. Luxuriously furnished with a handsome board table and comfortable chairs, the conference areas rank among the most impressive rooms in the new office. A coffee room, affording a breath-taking view of Los Angeles, includes the latest kitchen facilities. The room seats 50 persons.

Illuminated plastic panels set in the walls, most notably in reception and conference rooms, present an identical floral pattern which brightens and distinguishes these areas. Live greens are placed generously throughout corridors and office areas.

An impressive office, as befits the stature of its occupant, the new Wilshire Boulevard headquarters very well might serve as model for offices that wish to combine beauty and functional layout.

Muriel Hagan, A. I. D., served as interior decorator for the project, and the P. J. Walker Company as general contractor.

Mutual —

(*From page* 39)

glass screens. A modern treatment of a floral design is hand-cut into the glass. Behind these panels, four serving lines provide speedy service. The kitchen is designed with the most modern equipment to insure piping hot and tasty meals.

The board of directors room, located on the fifth floor, combines dignity with informality and ranks as one of the most striking single rooms in the entire building. Three walls are covered in butternut wood paneling, accented with dark horizontal bands of Rhodesian walnut. The fourth wall is paneled in framed squares of frosted plexiglas; natural greens line the base of this wall. The floor is carpeted in cedar-colored wool chenille, furniture is upholstered in turquoise leather, and linen draperies are of turquoise and gold.

The fifth floor also contains the private offices of the chairman of the board, the president and other executive officers, and the law department and Heritage Room. This latter room, to which the public is invited, houses documents, pictures and other objects of historical importance in the company's long history. Portraits of past presidents hang in the central corridor on this floor.

The Pelican Room, a smartly decorated assembly room with a stage, is located on the seventeenth floor. It receives its name from the company's emblem and the large bronze plaque embedded in the floor at the entrance to the assembly area. Popularly termed the "Penny," it was brought to the new quarters, at the request of the staff, from its 30-year resting place in the rotunda of the former home office at 300 Broadway. The room is 54 by 120 feet and can accommodate 800 persons. A long row of continuous windows on the west side provides an arresting view of the downtown Newark skyline.

Other features incorporated in the new building include "just right" weather throughout the year, provided by uniform temperature and humidity controls regulated by two air conditioning systems. A pneumatic tube system, running through the building, speeds inter-office communication. Letters, files, even small objects, encased in plastic containers, may be sent from department to department at a speed of 25 feet a second until they reach terminals dialed by the sender.

The company's decision—announced on December 13, 1954—to remain in downtown Newark, rather than join many other firms which had re-settled in suburban communities, was credited recently with spearheading a civic redevelopment program which is rapidly altering the face of the city. That Mutual's re-locating in the city of its birth was to act as a stimulus for such redevelopment is attested to by newspaper headlines and comments by city officials which hailed the decision in favorable terms. It has been estimated that the city's total new construction, spurred in substantial measure by Mutual's building program, will exceed $200,000,000.

The one completed adjacent office building in the company's building program houses the Hospital Service Plan of New Jersey. The second, which also will contain six floors, will be used as a general office building. The parking garage, which will total 278,000 square feet, will include three floors and occupy an area directly to the rear of the home office building.

Now entering its 113th year, Mutual Benefit Life is 12th largest among life insurance companies with assets of $1.7 billion, and operates in every state in the Union. Its new $12 million home expresses the company's pride in past achievements and, of equal importance, its role as employer and as corporate citizen in Newark and across the nation.

Suppliers' List

ACOUSTICAL MATERIALS: Johns-Manville Corp.
AIR CONDITIONING: Worthington Corp.
CARPETING: Firth Carpet Co.; A. & M. Karagheusian, Inc.; James Templeton & Co., Ltd.
DESK SETS: Mark Cross.
FILING EQUIPMENT: Art Metal Construction Co.
FLOOR COVERINGS: Armstrong Cork Co.; Congoleum-Nairn, Inc.; Kentile, Inc.; Robbins Floor Products.
FURNITURE: Albano Co., Inc.; Art Upholstery Co.; De Lynn Associates, Inc.; Strauss-Duparquet, Inc.; Macey-Fowler, Inc.; Mueller Metals, Inc.; Schmieg & Kotzian; Shaw-Walker Co.; Stow & Davis Furniture Co.; and Desks, Inc., suppliers of W. H. Gunlocke Chair Co., Standard Furniture Co., Steelcase, Inc.
LIGHTING FIXTURES: Gruber Electric Co.
MOVABLE PARTITIONS: E. F. Hauserman Co.; Curtis Office Partition Co.
PNEUMATIC TUBE SYSTEM: Airmatic Systems Corp.
SAFES: Mosler Safe Co.
WATER COOLERS: Wall-Pak.

Federated —

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table that is boat shaped, like the tables in the offices of the company's top officials. But perhaps its most spectacular feature is the way in which handicap has been turned to advantage; structural columns on one side of the board room are handsomely masked by an undulating leather panel wall, which is a rich and unusual note in itself, and once again shows the consistent use of contrast in wall materials that is so strong a theme throughout these offices. The leather wall panel is centered against a wall of neutral background, which in turn is contrasted with paneled walnut on the wall at right angles, and the facing glass wall on the court.

Expansion provisions exist in the office in the inclusion of more than the actual working space currently needed for each department. In addition there is additional unused space on the garage roof beyond the penthouse, now being used for a staff parking area, that could be roofed over and incorporated into the office, if that should become necessary in the future.

Bright, yet efficient, comfortable, yet workable, flexible, yet well-organized, the new headquarters of Federated Department Stores, incorporating as it does so many ideas from planners experienced in merchandising layout, offers

a wealth of provocative—and productive—ideas to the office world.

Suppliers' List

ACOUSTICAL MATERIALS: Owens-Corning Fibreglas Corp.
ADDING & CALCULATING MACHINES: Friden, Inc.; Remington Rand, Inc.; Monroe Calculating Machine Co., Inc.; Burroughs Corp.
AIR CONDITIONING EQUIPMENT: Trane Co.
BOOKKEEPING & ACCOUNTING MACHINES: Clary Corp.
CARPETING: Mohawk Carpet Mills, Inc.; Edward Fields.
DICTATING EQUIPMENT: Thomas A. Edison, Inc.
DUPLICATING EQUIPMENT: A. B. Dick Co.
FILING EQUIPMENT: Globe-Wernicke Co.
FURNITURE: Directional; Jens Risom Design, Inc.; Steelcase, Inc.; Costa Mesa Furniture Co.
INTERCOMMUNICATIONS EQUIPMENT: Western Electric Co., Inc.
LIGHTING FIXTURES: Day Brite Lighting, Inc.
MOVABLE PARTITIONS: Marsh Wall Products, Inc.
SAFES: Mosler Safe Co.
TYPEWRITERS: International Business Machines Corp.
WATER COOLERS: Filtrine Mfg. Co., Inc.

Connecticut —

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were devised for the important main building area and the North Wing. In the main building, emphasis is placed on bold use of color with neutral tones remaining in the background; in the North Wing, neutral tones are given importance through use of contrasting natural wood grains—teak-walnut—and travertine and carrara marbles, and again in various fabrics, such as silk, wool and linen. Most of the furniture used throughout was specially designed by Mrs. Knoll to fit the six-foot module of the building.

General office areas extend the full length (475 feet) and width (325 feet) of the building. Free-standing walls in bright colors (specially-designed Formica) are red, blue and yellow, which brighten and define the areas. These movable walls anticipate future changes, assuring flexibility of space for necessary expansion. Space also is divided into compartments by banks of files that serve a dual role. They separate areas, and at the same time can be used from either side. The files are arranged at eye level, effectively set apart departments and are low enough to keep the feeling of openness consistent. Supervisors' areas, measuring 12 by 12, are separated in this open area by low plant boxes, a striking pattern that adds interest and provides privacy for occupants. The areas are defined further by grey carpeting and a single wall panel. Desks in these offices, as well as throughout the general office area, are modified standard designs, simplified and adjusted to complement the interior. Supervisors' chairs are covered in either grey Highland Tweed linen or persimmon and black Kerry linen. All clerical chairs, likewise designed by Eero Saarinen, are covered in durable grey and black Highland Tweed.

As might be expected in a company listed among the leaders in promoting employee fringe benefit programs, employee facilities occupy a great portion of the main building. A variety of shops are housed on the lower and first levels; a color theme of natural cherry-wood paneling is carried throughout these areas.

The cafeteria is designed to serve and accommodate 800 persons at a single seating. Recessed lighting in the vaulted ceiling highlights and adds warmth to the room. Color is kept to a minimum; a clear blue was selected for all table tops, rectangular or square plastic laminate surfaces. Chairs are molded plastic shells in black, with specially-designed black and white textured Naugahyde pattern. Brushed chrome pedestals give an added lightness to the entire area. Curtained walls blend lemon yellow with white Belgian linen casement, used in alternate strokes from floors to ceiling, thereby repeating the light and sun of the outdoors. Also included are a recreational area, card room, employees lounge, game room, bowling alley and auditorium — all in addition to extensive play areas on the exterior grounds.

The 700,000-square-foot Connecticut General plant consists of three connected buildings—the three-story main office building, the cafeteria building and a five-story executive wing. The exterior is clothed in green, sun-absorbing glass curtainwalls with grey-backed glass spandrels. A 60-foot span between columns affords unobstructed space in the main building. Four 72-foot square courtyards, planned by famed Isamu Noguchi, sculptor and landscape artist, provide an exterior view for employees inside.

The interior and exterior of the new office building, observed as a whole or viewed separately, present a striking picture of successful pre-planning and execution. Nothing was left to chance; a free interchange of ideas, coupled with careful study, prevailed. In the words of Gordon Bunshaft, Skidmore's chief of design:

"I don't think we've ever worked more closely with a client or had a more demanding one. As a result, we at Skidmore feel that Connecticut General's building is one of our most outstanding. We have helped turn a good idea into a building we feel sure will stand the test."

Suppliers' List

ACOUSTICAL MATERIALS: National Gypsum Co.; New England Lime Co.
ADDING & CALCULATING MACHINES: Remington Rand, Inc.; Victor Adding Machine Co.; Monroe Calculating Machine Co., Inc.; Marchant Calculators, Inc.; Friden, Inc.
ADDRESSING EQUIPMENT: Addressograph-Multigraph Corp.
AIR CONDITIONING EQUIPMENT: York Corp.
BOOKKEEPING & ACCOUNTING MACHINES: Burroughs Corp.
CARPETING: Bigelow-Sanford Carpet Co., Inc.; V'Soske.
DESK SETS: Esterbrook Pen Co.
DICTATING EQUIPMENT: Gray Mfg. Co.
DUPLICATING EQUIPMENT: A. B. Dick Co.; Cormac Industries, Inc.; Photostat Corp.
ELECTRONIC ACCOUNTING EQUIPMENT: International Business Machines Corp.
FILING EQUIPMENT: General Fireproofing Co.
FLOOR COVERINGS: Armstrong Cork Co.
FURNITURE: Knoll Associates, Inc.; General Fireproofing Co.
INSULATED RECORD STORAGE EQUIPMENT: General Fireproofing Co.
INTERCOMMUNICATIONS EQUIPMENT: Stromberg-Carlson Co.; Southern New England Telephone Co.
LIGHTING FIXTURES: Smithcraft; Miller.
MAILROOM MACHINES: Pitney-Bowes, Inc.; B. H. Bunn Co.; New Hermes, Inc.; Bircher Co., Inc.
MOVABLE PARTITIONS: E. F. Hauserman Co.
PUNCHED CARD EQUIPMENT: International Business Machines Corp.
SAFES: Mosler Safe Co.
TYPEWRITERS: Smith-Corona, Inc.; Remington Rand, Inc.; International Business Machines Corp.
WATER COOLERS: Filtrene.

Gulf —

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vantage. The largest, used primarily for monthly Gulf dealer conferences, seats 50 persons and is located on the second floor adjacent to the main entrance. The company, which prides itself in having offered the first free road maps about 44 years ago, has included an expanded Tourguide Bureau in the new offices to handle the more than 70,000 requests for free touring information received annually. Parking is available a few steps from Tourguide, which is situated just off the main lobby. A hard-surfaced parking lot which holds 350 automobiles is provided for employees, while visitor parking accommodations are located at the front.

A large, brilliantly-decorated and il-

luminated cafeteria seats 300 and offers well-diversified menus and such popular features as the continental breakfast, served between 7:45 and 8:25 a.m. The cafeteria opens onto an outside patio which can be used as a dining area when the weather permits. Other facilities include a dispensary, separate rest rooms and showers for maintenance personnel and two self-service elevators which serve the entire headquarters.

The communications network has two major components. A network dictation circuit enables a person to pick up the telephone and dictate a letter, which is recorded on a plastic disk, then typed by a transcriptionist and returned to the dictator in final form. Intertwined within the walls is a high-speed pneumatic tube system through which material may be conveyed in a matter of seconds to any part of the building. Communications are encased in plastic containers and routed to any one of 14 receiving stations, placed at strategic points. A central receiving station processes mail and messages, and two Teletype machines handle messages to and from other Gulf offices in the United States.

A novel and effective three-pronged plan of cooperation among architectural firms and industrial designers was formulated to bring about the handsome, modern motif of the new home. First, an economic analysis of the Division's role in the petroleum industry was undertaken by Michael Saphier Associates, New York. This firm also projected the growth of the industry itself, of Gulf Corporation, of the Division and of each individual category within the Division. As a result of these studies, Gulf could determine how much space would be needed by its Philadelphia Division for the next 25 years.

The George M. Ewing Company, Philadelphia, was appointed to supervise the planning and design of the structure. This company, in turn, called upon Welton Becket & Associates, Los Angeles, which specializes in contemporary design, to set the character of the new building. Efforts by the three firms were coordinated, from planning stages to actual construction. How successfully this three-way cooperation worked is attested to by one simple statistic: Building costs were less than $20 a square foot, a remarkably low figure for this type of "ranch style" construction.

The spacious new building is the sixth home which the Division has occupied in its 52-year history. Although actually located in suburban Bala-Cynwyd, the mailing address for the company is Philadelphia 1.

Exhibiting the pre-planned heavy emphasis on overall utility of purpose, employee conveniences and a distinctive decorative quality, the headquarters building itself proves the validity of the statements of employees — both old and new — who proclaim that, indeed, Gulf *is* a good company to work for.

Suppliers' List

ACOUSTICAL MATERIALS: Owens-Corning Fiberglas Corp.
CARPETING: Goodall Fabrics.
DICTATING EQUIPMENT: Thomas A. Edison, Inc.
ELECTRONIC ACCOUNTING EQUIPMENT: International Business Machines Corp.
FILING EQUIPMENT: Steelcase, Inc.
FLOOR COVERINGS: B. F. Goodrich Co., Industrial Products Div.; Gulf.
FURNITURE: Herman Miller Furniture Co.; Steelcase, Inc.
INTERCOMMUNICATIONS EQUIPMENT: American Telephone & Telegraph Co.
LIGHTING FIXTURES: Lightolier, Inc.; Litecontrol.
MICROFILM EQUIPMENT: Eastman Kodak Co.
MOVABLE PARTITIONS: Aetna Steel Products Corp., Arnot-Jamestown Div.
PUNCHED CARD EQUIPMENT: International Business Machines Corp.
SAFES: Mosler Safe Co.
WATER COOLERS: Hires.

Greyhound—

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late a black frame surrounding the aluminum window panels. The concrete floor is covered with carpeting in private rooms, with asphalt tile elsewhere. All woodwork is Korina, a wood imported from the Belgian Congo, which has been lightly toned and lacquered. Additional advantages incorporated in the new headquarters include central mailing, filing and stenographic departments, and a fully-equipped cafeteria and attractive lunch room for use by all personnel.

Adjoining the reception area is the board room with its walls of wood paneling and grass cloth. The quiet dignity of the room is key-noted by its one decoration — an antique Japanese screen depicting a single pine tree painted on a dull gold background. All furniture is teak, with Greyhound blue leather upholstery on chairs. Since the room is designed to accommodate meetings of various types, the large conference table is divided into two sections and supplemented by a round table for informal discussions.

Additional executive offices, ringed around the interior garden court, are all designed to harmonize in a single coordinated scheme. Yet, each reflects the individual occupant's choices regarding color of draperies and upholstery.

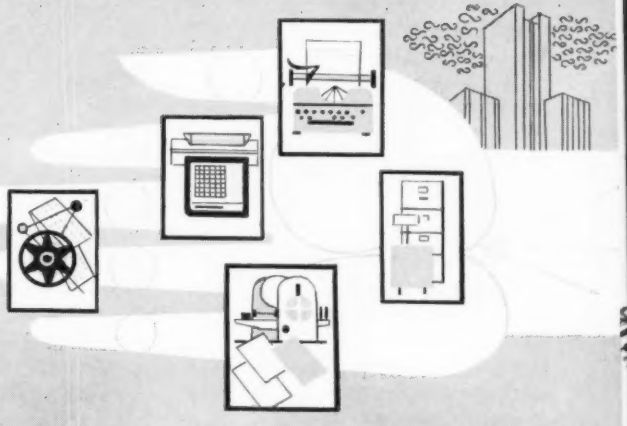
The lunch room is given a vibrant and cheerful atmosphere through use of light and colorful furniture and walls, as well as careful selection of well-designed trays, dishes, silver and other table accessories. All paintings and sketches throughout are signed originals by artists of local and international repute and consist of lithographs, serigraphs, block prints and water colors. Ceramic ash trays were exclusively designed for Greyhound and executed by Eugene Deutch, noted ceramist.

Thus, from placement of offices to the most minute details, the transformation of Greyhound from a city-centered to a suburban office was accomplished with a maximum of efficiency in planning and construction. And in this instance, as an examination of the new headquarters building will prove, this particular move was the city's loss —but the country's gain.

Suppliers' List

ACOUSTICAL MATERIALS: U. S. Gypsum Co.
ADDING & CALCULATING MACHINES: Burroughs Corp.; Friden, Inc.; Marchant Calculators, Inc.; Monroe Calculating Machine Co., Inc.; Remington Rand, Inc.; Underwood Corp.
ADDRESSING EQUIPMENT: Elliot Addressing Machine Co.
AIR CONDITIONING EQUIPMENT: Carrier Corp.
BLINDS: Vertical Blinds Corp. of America.
CARPETING: Bigelow-Sanford Carpet Co., Inc.; Lees; Karastan.
COMMUNICATIONS EQUIPMENT: Illinois Bell Telephone Co.; Teletype Corp.; Western Union Telegraph Co.
DICTATING EQUIPMENT: Dictaphone Corp.
DUPLICATING EQUIPMENT: Eastman Kodak Co.; Ditto, Inc.; A. B. Dick Co.
FABRICS (UPHOLSTERY): Boris Kroll; Jens Risom Design, Inc.; Knoll Textiles; Lackawanna Leather; U. S. Naugahyde. (DRAPERIES): William Webb; Knoll; Konwiser Fabrics; Brunschwig & Fils; F. Schumacher.
FLOOR COVERINGS: Armstrong Cork Co.
FURNITURE: Knoll Associates, Inc.; Jens Risom Design, Inc.; Hagen & Strandgaard; Laverne; Raymor; Lehigh Furniture Corp.; Herman Miller Furniture Co.; American Chair Co.; Steelcase, Inc.
LIGHTING FIXTURES (FLUORESCENT): Solar Light Mfg. Co. (INCANDESCENT): Lightolier, Inc.; Century; Gotham Lighting Corp.
MAILROOM EQUIPMENT: Pitney - Bowes, Inc.
MOVABLE PARTITIONS, PANELS: Hartmann Sanders, Inc.
SAFES: Mosler Safe Co.
TYPEWRITERS: International Business Machines Corp.
WALL COVERINGS: Kneedler-Faucher; L. E. Carpenter; Columbus Fabrics.
WATER COOLERS: Halsey Taylor.

A review of current office equipment



TOOLS OF THE OFFICE

By **Robert Beeman,** Managing Editor, *Office Management*

To solve his problems the office manager must know both systems and machines — his first task is finding the time to study them

KNOWLEDGE (it has been said) is like an island in a sea of ignorance. The larger the island, the longer the shoreline.

In other centuries a man might know all he needed to know about his business. He could be the craftsman making the product to be sold. Or he could be a provider of services. He could be his own advertising man, his own delivery boy, his own bookkeeper. He was, of course, his own president and board chairman. And he could be all of these at once.

What there was to know about each of these activities was pretty much limited to what a single man *could* know. This was not an age of specialization.

The modern office is, of course, quite different. It is full of specialists. Specialization may be found at low levels and at high levels. One may be a typist, a bookkeeping machine operator, a file clerk. If one's talents include the ability to direct people, one may become a supervisor. If one's knowledge is broad enough to encompass the whole range of office work, one may function as an office manager. All of these require some degree of specialization even though it may be exerted at a high and complex level.

At each level of specialization a body of specialized knowledge has developed. This knowledge includes familiarity with specific systems, procedures, and machines. It may include not only the specific systems, procedures, and machines used in a particular application, but the repertory of systems, procedures, and machines that are available and that might be applied. This knowledge derives both from personal experience and from the researches and experience of others, as written down and made available.

At any one level, the existing body of knowledge is already considerable.

And it is being added to constantly by the makers of business machines, by the systems experts, and by the management consultants.

The specialist runs the constant danger that as he becomes more knowledgeable in his specialty he will become more ignorant — relatively — in other fields. The increase in knowledge thus does indeed tend to bring an increase in ignorance. It takes real effort to guard against it.

This is the problem that faces today's office manager. Somewhere — in some instruction manual, in some library book, in some report, or in someone's personal experience—is the answer to almost any office problem he may have. But how shall he dig it out?

The specialist who can produce the answer may not know that the question has been raised. Or if he does, he may be unfamiliar with other phases of the problem, and cannot adapt his solution to fit it. The more knowledge is developed, the more the applicable parts of it tend to become buried in the total mass.

It would be unthinkable to hinder further advances. There are still too many problems for which no answers exist at all. But in the midst of progress there is still time to stop and take the benefits of what has already been accomplished.

What the office manager really needs is time to study and plan. There are thousands of machines and systems offered for his use. He needs a chance to look them over.

The office manager must move up

This is why the office manager is tending more and more to rise to an executive level. His is becoming a planning job. How can he possibly do it well if he is not accorded the status and opportunities associated with planning jobs? The office manager is no longer a mere practitioner of the office arts. He is a student of methods and procedures. He is a deviser of programs. He is a coordinator of diverse and sometimes conflicting systems. He is becoming, more and more, an executive.

To some extent he has always had some executive functions. Now that data processing is becoming "integrated" (which does *not* mean that it is becoming more complicated), he must expand his executive powers.

From the many articles which have been written on integrated data processing, it is clear that many of the most promising developments are those which eliminate duplications in the work of several departments. Accounting, for example, may become integrated with sales and with shipping. The old departmental boundaries have had to be crossed. (An account of this principle is given in the section entitled *Integrated Data Processing Equipment.)*

To supervise integration on such scale, office management must be in the hands of an individual who carries the authority to cross these boundaries. Moreover, the equipment involved is often costly, and the necessary expenditures can be approved only at the executive level. In any case, the systems studies required must be authorized by top management, even if no major equipment is purchased.

Such an upgrading of the office management function should not surprise anyone. A number of recent studies have cited enormous wastes of money in the office. These wastes, when expressed in terms of the volume of sales necessary to produce equivalent amounts, are indeed impressive. With the attention being given to the size of the problem, it is only natural to assume that responsibility for solving it should be placed at a high level.

It is only recently that the problem has been appreciated at all. Unfortunately, the immediate reaction has been to rush out and buy machines. Often these have been purchased without any real understanding of what they could do, without any assurance that they were really the best machines for the job to be done. This haste has been a common error.

Office problems are best solved by the use of the best *systems*. Systems may or may not call for machines. New machines may permit new systems, but the machines are not an end in themselves. This is the real lesson for today—the true guide to tomorrow's successes.

One of the first large-scale electronic computer systems to be installed threatened to become a fiasco because it was asked to do too much. The problem was not that the equipment could not handle the job but that the system employed was too clumsy.

The electronic computer has almost unlimited capacities for handling exceptions. But it does so at a cost in time. It is rumored that this computer was asked to process payrolls under rules that were full of a complex list of exceptions. The story is that it even was programmed to excuse lateness on the part of the employees because of the failure—at home—of a piece of equipment made by the company. Whatever the merits of such an excuse, the attempt to cover all possible exceptions in the programming made the whole system too cumbersome to be profitable.

Such an error may be set down to experience. It was no doubt necessary that someone should find out by trial and error what is feasible and what is not. But the error, it must be said, was in the use of the machine, not in the machine itself.

The same principle holds at all levels. An electric adding machine would be inadequate to handle the payroll of a large company, but it could be an extravagance in a doctor's office. What is required is a suitable system — and then the machine that suits the system.

While this point has been made many times in the last few years, it is well to put it into perspective. The office, as always, is concerned essentially with the handling of data in one form or another. But until recent years the machines and methods on which it could call have been fairly limited.

Are there too many answers?

There has been, as everyone knows, an immense technological growth in the office field. The mass of knowledge —of systems and of machines—is now enormous.This is the new factor — the sheer bulk of the information available to solve office problems. It is no longer possible to make a quick run-through of possible answers.

And as long as offices try to function in the old ways, with a minimum of time allowed for study and planning, the benefits offered will not be found, unless by chance. The existence of this huge body of information means that the office must adjust to take account of it.

Systems study and machine study are now essential in the running of any office. For the office which neglects such studies will be less efficient than the office which sees the possibilities in new ways of doing things. As a less efficient office, it will be a more costly office, relatively. It seems unlikely that in the future it will be competitively feasible for companies to support offices that are costly to run. Solution of the office problem is therefore an essential in preparing an organization to meet its competitors on equal terms.

So it follows that the office manager must give more and more of his time

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(See also the *Office Layout and Furnishings* section for other types of equipment.)

to planning. There are many sources of current information — textbooks, periodicals, business shows, manufacturers' catalogs, specialized schools, business associations, conferences, individual contacts with other departments and other companies. Executives use such resources. As the office manager approaches executive status he too will have to use the executive's methods. He will have to spend a larger than ever portion of his time in study.

This department will not attempt to comment on all of the phases of office knowledge which affect the office manager. It is concerned primarily with machines.

But machines make possible some of the systems most useful to the office manager. A study of machines themselves can therefore be most informative.

The pages which follow are intended to offer a general guide to some of the most important kinds of office machines. To some extent, systems uses are mentioned in connection with them. Even where they are not mentioned specifically, the importance of systems is always an underlying thought.

Systems must be tailor-made, and therefore cannot be purchased like machines. It is thus not possible in these pages to go into any great detail with respect to either systems or machines. But it is hoped that the articles covering each type of equipment provide the kind of outline that will help to clarify for the office manager the particular areas he may wish to investigate in greater detail. To further assist, each section contains a list of the major manufacturers of each general type of machine, together with a coded index to the type of equipment offered.

It will be noted that the things which are said are very much the same things that have been said many times in recent years. This fact may be attributed not to any failure on the part of manufacturers to produce new designs, but rather to the persistence of basic principles which this magazine has reported over the years.

These principles, which are even more fully respected today, include the following:

Inasmuch as the system governs the machine, rather than the reverse, modern equipment is made to be flexible, so that it can be incorporated into a variety of systems. Newer advances very often are in the direction of increasing that kind of flexibility. Among these are means of changing accounting machines quickly from one type of operation to another—as from accounts receivable to payroll. Duplicating processes are being paired off more and more with copying processes. There are many other examples.

Other advances consist in simplifying or reducing the number of steps taken by an operator in using the machine. This is the trend toward "automation" (automatic control) or, at least toward mechanization (increasing the number of small steps which can be made automatic).

Much new equipment is more compact than its predecessors. It may be said that the manufacturers are giving at least some thought to the fact that office space is expensive. But it is also true that by making equipment compact, it is also sometimes made portable. Thus, dictating machines become increasingly compact, and more new uses are being found for this equipment in the field in cars, in planes, in warehouses, and so on.

There is a tendency, in some fields, at least, to increase the operating speed of equipment. While this may produce some advantages, these are usually obtained at a price. But the machines are available where needed, while slower, and less expensive machines are also still on the market. In effect, the user now has a wider choice.

In almost all areas there are continuing technical improvements. There are also certain advances intended to have a psychological appeal. More and more office machines are offered in attractive designs and colors. Even in the cold world of machines there seems to be room for exerting emotional impact.

It is admitted that even in a section as large as this it is impossible to cover the subject thoroughly. From this fact may be taken further evidence of the size of the island of knowledge which has now been built up. It is clear that the office executive faces a real problem in keeping up with the knowledge that is at his disposal. It is hoped that this section provides enough—but not too much—detailed information to at least help him appreciate the nature of the problem so that he may decide fairly how much time he, as an individual, needs to give to it.

Adding, Calculating, and Accounting Machines

NUMBERS are a major business of the office. Much of the information with which the office works is expressed in numerical form. Many of these numbers must be sorted, combined, tabulated, recombined, summarized.

Examples are numerous. Prices must be extended and the extensions totaled. Sales figures must be sorted by product, area, and salesman — and totaled. Discounts and commissions must be figured—and again totals must be determined. Wage rates must be multiplied by hours worked. Withholding tax and insurance deductions must be computed and subtracted from payroll records. The office works endlessly with figures of one sort or another.

Since most of these figures must be used in computations of some variety, man has devised, over the centuries, many methods to speed and simplify his computations.

Some of these methods are mental—as simple as the elementary multiplication tables learned in grade school. At the other end of man's range of figuring powers is the giant electronic computer, with its incredible speeds and capacities to follow predetermined instructions.

Between are an enormous number of devices, simple and complicated, to aid man in his figuring.

It would not be fair to say that any one of these is necessarily any better than any other. Each has its uses. Any one of them may fit effectively into an office's figuring system, provided it is suited to the needs of the office in terms

of its speed, ease of operation, capacity, price, maintenance, versatility, and other governing factors.

The effectiveness of a machine, in short, depends less on its own characteristics as considered for their own sake than on its ability to supply the needs of a particular system.

There are certain misconceptions about what constitutes true effectiveness in machine performance. Often a machine is purchased because of its speed. But speed is not, of itself, important. It has value only if the time it saves can be used productively. Speed may justify itself if it makes possible timely reports that are not otherwise possible—provided the reports have real usefulness. It may save labor costs if it permits either a reduction in the labor force or a useful increase in production relative to the labor costs. But in itself speed is not a virtue. (Imagine installing an electronic computer in the corner delicatessen for the purpose of totaling customers' purchases!)

Speed depends on convenience

It is true that, in a sense, all machine performance can be measured in terms of speed. But this does not mean solely the speed with which a machine calculates or tabulates. It includes the arrangement of the controls, which may determine the speed with which a worker may operate it. It includes the convenience of using the output. For example, if a written result is required, a fast calculator that shows the results in dials is slowed by the need to copy the results, where a supposedly slower machine that prints the resulting figures on a tape may have greater overall speed, for the purposes of a given operation.

If two adjacent departments must use a machine for figuring, it may be that two fairly simple machines may serve better than one that is more than twice as fast. This is an old story—it is the system that matters, not the particular machine. The machine, however, makes possible more effective systems.

It may be said that in today's offices there are many machines that are too high powered for the work they have to perform. Yet there are many operations performed manually which could profitably be mechanized, and still others performed by machine which could benefit from the use of larger machines. Indiscriminate purchase of machines is never an intelligent way to seek office efficiency.

Tools of the Office

Since there are so many different aids to figuring, it may be helpful simply to mention the principal types, as an indication of the wide range available.

At the very simplest level, of course, must be considered pencil and paper—a technique too often overlooked.

Next may be ranked simple scales, charts, and tables. Some of these, such as those designed to compute payrolls by multiplying wages by hours worked, may be available commercially — as printed tables in books, as charts, as plastic scales and slide rules. They can accomplish figuring speeds which can be of immeasurably greater value than their cost. Other similar devices can be created in the office through the use of simple materials and a little ingenuity. Such devices may be far more effective than actual machines in smaller figuring operations.

Above these in the scale are the simpler types of machines. There are adding machines on the market, for example, which are hardly bigger than a man's fist. Some of these can actually perform fairly complicated computations. Most are small enough to be carried about readily. They use mechanical gearing for purposes of addition, the inputs being made through simple levers or keys, or sometimes by inserting a stylus in a dial which resembles that of a telephone.

Inasmuch as nearly all forms of computation in the office may be reduced to either positive or negative addition (multiplication being a form of repeated addition and division a form of repeated subtraction), even a very simple adding device can be used for many kinds of office figuring. What distinguishes these simple devices, basically, from more complicated equipment, is their lack of automatic short cuts, such as provisions that eliminate the need to reenter figures in the machine repeatedly when multiplying. Also, they are usually slower in operation.

Standard adding machines may be considered next on the list. The less expensive ones operate manually; faster, and somewhat more costly, models are powered electrically. Two basic styles are popular—the ten-key model which lends itself to high-speed touch operation, and the full-keyboard model, which permits the operator to read and check each number in turn on the keyboard before it is entered into the machine. Some machines (mostly of the ten-key type) print results on tape; others (generally of the full-keyboard type) show the results in dials. In certain cases, the machine may have a carriage to allow printing on forms; however, this feature usually takes it into the bookkeeping machine class.

The office calculator is a more complex form of adding machine. Again it may be either manual or electric, ten-key or full-keyboard in design. It may or may not print out the results of computation. There is considerable diversity among individual models. To some extent there is a variation in the speed obtainable from machines made by different manufacturers, and from machines at different price levels from the same manufacturer. However, it is unlikely that any further significant advances will be made in the speed of mechanical devices. Truly high-speed operations are the province of electronic equipment. Most of the differences between machines have to do with specific keyboard arrangements and short-cut features. In some machines, for example, multipliers may be entered on a separate keyboard; in others a telephone-type dial may be used. And in some cases it may be necessary to use the principle of repeated addition more directly (with the help of a repeat key in most cases) where other means are not convenient.

Special features solve special needs

There may be, in addition, a variety of special features, such as automatic positioning of the decimal point, showing of amounts entered and computed in various sets of dials, printing of credit balances in red, automatic rounding off of fractional values, special provision for figuring standard fractions such as ½, ¼, or ⅛, and even the ability to figure square roots. Some of these features may be available on smaller adding machines.

In any case, as the machine becomes more complicated, so is there an increase in the number of special features it offers, and particularly in the variation between machines, and in the variations often possible with individual machines by means of special adaptations.

Bookkeeping and accounting machines differ from adding and calculating machines in that they provide certain additional capacities, such as the ability to print descriptive information

The typical modern office is a wide open area, with room in which desks and office machines can be rearranged to suit the needs of changing work flow. Most new machines tend to be compact, portable, and flexible in use.

(Picture by courtesy of Cory Corp.)

in billing, to sort figures into separate registers for totaling separately, or to perform other functions that are supplementary to the figuring capacity. In all cases, however, some form of figuring capacity is provided, although it may be of the simplest type, and the results are made available in printed—or sometimes in "common language"—form.

Some machines are as simple as a posting machine in which a bank of date and symbol keys are used to identify items listed on statements. They may have little more figuring capacity than is necessary for simple addition (horizontal) as used in determining current balances.

(Incidentally, adding machines are often used for similar purposes, since certain descriptive numerical information, such as account numbers, can be printed by use of the non-add feature; however, if the machine has a carriage, permitting entry of information in more than one column, it may be more properly described as a form of bookkeeping machine.)

The degrees of complexity which may be added to bookkeeping and accounting machines vary enormously. Versatility and capacity of a machine increase with, among other things, the number of registers, each of which permits the figuring of an individual subtotal, which may or may not be added automatically into grand totals, and with the type of descriptive keyboard offered, which may be as complete as a full typewriter keyboard with additional special keys.

To make proper use of the figuring and descriptive abilties of these larger machines requires some means of "programming" the machine so that it can follow a pre-determined routine easily. For example, it may be required to enter one figure, multiply it by another, add a third, compute a percentage of the total, and subtract the result from some previously computed balance. The machine must go through a series of steps which fall into just a few basic categories — addition or subtraction, multiplication or division, entering of figures without adding, tabulating, stopping to allow entry of descriptive information from a keyboard, etc.

Simple steps controlled automatically

On the simplest machines, these steps must be individually supervised by the operator. As the machine becomes more complex, it takes over more and more of these steps automatically. It is "programmed" in various ways, and the programs are generally interchangeable. Changes may be made on some machines by exchanging a control bar, which is done without difficulty. Others permit the presetting of several different programs in the machine, the desired program being selected by turning a knob. In electronic equipment, the possibilities are far greater.

Thus a single machine may be suited for payroll, accounts receivable, accounts payable, inventory, or other functions interchangeably.

Typical of the kind of service which can be had from the more expensive machines is a feature on a payroll model which computes Social Security taxes automatically, excluding that portion of income which is not subject to the tax—i.e., that portion above $4,200 in a year.

Equipment of this complexity verges on the domain of punched card equipment, which is geared to accomplish the same kinds of functions on a greater scale.

Punched card equipment, of course, operates through the "common language" medium of punched cards, and as such it is more usefully considered in the general category of equipment for integrated data processing, which is discussed elsewhere in this department.

Perhaps the most significant developments in adding, calculating, bookkeeping, and accounting machines over the last few years have been those which make them suitable for use in integrated data processing systems, which, again, are covered in the IDP category in this review. The basic approach is to equip standard machines with units for reading and/or creating a common language record which can be used by another machine. The purpose, of course, is to permit information entered into the system at any point to be carried automatically to other points in the system without having to be re-entered by human agency. For the most part, the machines used to enter data were not created specifically for integrated data processing. They are, rather, modifications of equipment which has long been familiar in the office.

In addition to actual machines, mention must be made of certain types of bookkeeping and accounting systems which, while they do not provide for actual figuring, do permit rapid handling of small-scale bookkeeping functions.

Chief among these are the so-called "one-writing" systems. Basically the

concept of such systems is oriented around carbon—in spot or paper form —or an equivalent method of creating more than one copy of a given entry from a single writing, as by "No Carbon Required" paper.

A number of related accounting forms which use certain common information are aligned in proper registration so that information written on the top form is repeated where necessary on the forms below. To avoid transfer of unwanted information, carbon is used only on those parts where transfer is required. Alternatively, such areas may be overprinted in such a way that the information would not be legible if transferred.

In a payroll application, for example, the following forms may be prepared at one writing: check or cash envelope, journal, employee's pay statement, and continuous earnings record.

In an accounts payable operation, the purchase or cash disbursement journal, check, and ledger can be prepared simultaneously. Or in an accounts receivable operation, the statement, ledger card, and journal may be written at once. Other applications are possible, requiring only that suitable forms be made up.

One of the common forms of "one-writing" systems is the so-called "pegboard," which provides for the mounting of the forms on a board. A number of variations are offered, but in general, provision is made both for the proper registration of forms and for the advancement of the forms after a particular set has been prepared. Various arrangements of levers, ratchet devices, and other mechanical aids may be used.

This type of system, however, need not be board-mounted. Some systems employ forms in a binder. In other cases, forms may be held in registration for typing on a systems typewriter. Such typewriters have front feed carriages, and some are equipped with accessories that permit automatic advancement of continuous forms.

Variety of systems available

Other bookkeeping and accounting systems make use of duplicating and copying equipment. Such systems, of course, require a study of forms suitable to the given operation, but the basic ingredient is the ability to reproduce certain common information, ranging from name and address of a customer to the details of his order, on any and all forms that require the information. Examples: spirit duplicators with facilities for printing selectively from masters, and diazo copying units using translucent masters on which repetitive information may be inserted as it is developed at various steps in the bookkeeping process.

This type of system, although simple, may permit a very real type of "integration" in company accounting operations. For example, it may permit automatic repetition of information from sales order to records for billing, shipping, accounts receivable, sales analysis, and so on, and may even provide for the automatic preparation of shipping tags and labels.

In all these forms and degrees of complexity, equipment for figuring and systems by which the results of figuring may be entered effectively into the accounting process provide the office manager with almost limitless possibilities for combining them into work-, time-, and cost-saving systems for advancing the flow of information through the office.

The Manufacturers

Adding and Calculating Machines

The following two lists cover the principal manufacturers of figuring equipment. The first list, devoted to makers of adding and calculating machines, is clarified by the use of the following code symbols following each name:

E—Electric machines.

FK—Full-keyboard machines.

IDP—Models which read and/or create a "common language," such as punched paper tape, or which otherwise are suitable for use in integrated data processing systems.

M—Manual machines.

MI—Miscellaneous.

NI — No information available at press time on current models.

TK—Ten-key keyboard machines.

Addo-X, Inc., 300 Park Ave., New York 22. (TK—M, E)

R. C. Allen Business Machines, Inc., 678 Front Ave., N.W., Grand Rapids 4, Mich. (FK—E, M; TK—E, M)

Alma Office Machine Corp., 34 E. 30 St., New York 16. (TK—E, M)

American Voss Corp., 18097 Sorrento Ave., Detroit 35. (TK—E, M)

Barrett Adding Machine Div., Lanston Industries, Inc., 24th & Locust Sts., Philadelphia 3. (TK—E, M)

Burroughs Corp., 6071 Second Ave., Detroit 32. (FK—E, M; TK—E, M)

Clary Corp., San Gabriel, Calif. (FK —E, M; IDP; TK—E, M)

Classic Calculators, Inc., 387 Fourth Ave., New York 16. (TK—E)

Comptometer Corp., 175 N. Paulina St., Chicago 22. (FK—E, M; TK—E)

Control Systems, Inc., Plus Computing Machines Div., 5 Beekman St., New York 38. (FK—E, M)

Facit, Inc., 404 Fourth Ave., New York 16 (TK—E, M)

Fremaco International, Inc., 188 W. Randolph St., Chicago 1. (MI—Small manual machines)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. (FK—E; IDP; TK—E)

Johnston Adding Machine Co., 13343 Sherman Way, North Hollywood, Calif. (TK—E, M)

Lanston Industries, Inc., SEE: Barrett Adding Machine Div.

Lighting Adding Machine Sales Co., 2306 W. Slauson Ave., Los Angeles 43. (MI—Small stylus-operated models)

Marchant Calculators, Inc., Oakland 8, Calif. (FK—E; TK—E)

Monroe Calculating Machine Co., 555 Mitchell St., Orange, N. J. (FK—E, M; IDP; TK—E, M)

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio. (FK—E, M)

Olivetti Corp. of America, 580 Fifth Ave., New York 36. (TK—E, M)

Plus Computing Machines, Inc. SEE: Control Systems, Inc.

Regna Cash Registers, Inc., 175 Fifth Ave., New York 10. (FK—E, M)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. (TK—E, M)

Resulta Adding Machine Co., Box 16, Massapequa Park, L. I., N. Y. (MI—Small manual machines)

Silver Bells Ltd., 1637 Del Monte Blvd., Seaside, Calif. (FK—M; TK—M)

Smith-Corona Inc., 701 E. Washington St., Syracuse 1, N. Y. (FK—M; TK —E)

Swift Business Machines Co., 51 Church St., Great Barrington, Mass. (TK—M)

Underwood Corp., 1 Park Ave., New York 16. (TK—E, M)

Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18. (FK—E, M; IDP; TK—E, M)

Bookkeeping and Accounting Machines and Systems

This list covers a wide variety of equipment, including standard book-

keeping and accounting machines and systems, charts, tables, and scales useful in accounting and bookkeeping, and, in a few cases, accessory equipment. It does not include integrated data processing equipment (which is covered elsewhere) except for standard punched card systems. The following codes are used:

BA—Bookeeping and accounting machines of the standard types—i.e., not listed in other categories.

C—Charts, tables, and scales.

E—Small electronic bookkeeping and accounting systems (complete units, not components).

IDP—Standard bookkeeping and accounting machines capable of creating and/or reading a common language record.

MI—Miscellaneous.

NI — No information available at press time on current products.

OWB—"One writing" systems of the binder type.

OWP — "One writing" systems of "pegboard" type.

P—Punched card systems.

Addo-X, Inc., 300 Park Ave., New York 22. (BA)

R. C. Allen Business Machines, Inc., 678 Front Ave., N. W., Grand Rapids 4, Mich. (BA)

American Voss Corp., 18097 Sorrento Ave., Detroit 35. (BA; MI—"One-writing" systems—machine type)

Ayres Corp., Box 1081, Wilmington, Calif. (MI—Payroll tax calculators)

Bates Accounting Forms Co., Inc., 33 W. 42 St., New York 36. (C; OWB; OWP)

The Blackbourn Systems, Inc., 230 S. Cedar Lake Rd., Minneapolis 5. (OWB)

Burroughs Corp., 6071 Second Ave., Detroit 32. (BA; C; E; OWB; OWP)

Business Systems Corp., 436 Pearl St., New York 38. (OWB; OWP)

Calculagraph Co., 306 Sussex St., Harrison, N. J. (MI — Elapsed time recorders)

Cel-U-Dex Corp., 1 Main St., Brooklyn 1, N. Y. (MI—Binders)

Comptometer Corp., 1735 N. Paulina St., Chicago 22. (OWP)

Cummins-Chicago Corp., 4740 Ravenswood Ave., Chicago 40. (MI — Punched card reconditioners)

Delbridge Calculating Systems, Inc., 2502 Sutton Ave., St. Louis 17. (C)

The Denominator Co., Inc., 261 Broadway, New York 7. (MI—Manual tabulating units)

Diebold, Inc., Canton 2, Ohio. (OWB)

Ditto, Inc., 6800 McCormick Rd., Chicago 45. (MI — "One-writing" systems using spirit duplication)

Evans Specialty Co., Inc., 1800 E. Grace St., Richmond 23, Va. (C)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. (C; IDP; MI—Billing machines consisting of calculator and typewriter)

Charles R. Hadley Co. (Todd-Hadley Div., Burroughs Corp.). SEE: Burroughs Corp.

The Institute of Business Research, Div. of Keller-Crescent Co., 28 S. E. Riverside Dr., Evansville 8, Ind. (OWB)

International Business Machines Corp., 590 Madison Ave., New York 22. (E; P)

International Payroll Machine Co., Box 293, Oxford, Pa. (MI—Payroll denominating machines)

Keller-Crescent Co. SEE: The Institute of Business Research.

Lansdale Products Corp., Box 568, Lansdale, Pa. (C)

Le Febure Corp., 716 Oakland Rd., N. E., Cedar Rapids, Iowa. (OWB; OWP)

Master Addresser Co., 6500 W. Lake St., Minneapolis 16. (MI — Statement addressing machines)

Master-Craft Corp., Div. of Shaw-Walker, 831-903 Cobb Ave., Kalamazoo, Mich. (OWB; OWP)

The McBee Co. SEE: Royal McBee Corp.

McMillan Book Co., 701 E. Genesee St., Syracuse, N. Y. (OWB—NI)

Monarch Metal Products, Inc., New Windsor, N. Y. (MI — Punched card accessories)

Monroe Calculating Machine Co., 555 Mitchell St., Orange, N. J. (BA; IDP)

Moore Business Forms, Inc., Niagara Falls, N. Y. (C; OWB)

National Blank Book Co., P. O. Box 791, Holyoke, Mass. (OWB)

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio. (BA; E; IDP)

Norfield Methods & Procedures, Inc., 933 S. Clinton Ave., Oak Park, Ill. (OWP)

Olivetti Corp. of America, 580 Fifth Ave., New York 36. (BA)

Peck & Harvey, 5650 N. Western Ave., Chicago 45. (MI—"One-writing" systems using diazo copying machines)

Payroll Tax Service, Inc., 44 W. 29 St., New York 1. (C; OWP)

W. H. Pusch, 427 W. Lynwood, San Antonio 12, Tex. (C)

Recordak Corp., 415 Madison Ave., New York 17. (MI—Photographic accounting systems)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y. (BA; C; P)

The Reynolds & Reynolds Co., 800 Germantown Ave., Dayton 7, Ohio. (OWP)

Royal McBee Corp., Westchester Ave., Port Chester, N. Y. (E, MI—Tabulating punch used with marginally punched cards; OWP)

S. K. Forms Co., 1619 Walnut St., Philadelphia 3. (OWP)

S & M Distributing Co., 3875 Garland St., Wheat Ridge, Col. (MI—Column titlers)

Safeguard Corp., Lansdale, Pa. (OWP)

The Shaw-Walker Co., Muskegon, Mich. (OWB; OWP)

Shepard Laboratories, Inc., 480 Morris Ave., Summit, N. J. (P)

The C. E. Sheppard Co., 44-01 21 St., Long Island City 1, N. Y. (OWB; OWP)

Silver Bells, Ltd., 1637 Del Monte Blvd., Seaside, Calif. (C)

Specialty Papers Co., 2028 Farrington St., Dallas. (C)

Speedograph, Inc., 5440 S. Ashland Ave., Chicago 9. (OWP)

Systematics, Inc., 60 E. 42 St., New York 17. (MI — Punched card intercouplers)

Systems Sales Co., P. O. Box 343, Binghamton, N. Y. (MI—punched card accessories)

The Todd Co., Inc. (Todd-Hadley Div., Burroughs Corp.) SEE: Burroughs Corp.

Underwood Corp., 1 Park Ave., New York 16. (BA; IDP)

Universal Business Machines, Inc., P.O. Box 5183, Columbia, S. C. (MI—Sorting machines)

Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18. (BA)

Visirecord, Inc., Copiague, L. I., N. Y. (OWP—also machine-type modification)

Wassell Organization, Inc., Sylvan Ave., Westport, Conn. (MI—Plastic tab and file card systems)

Wilson Jones Co., 209 S. Jefferson St., Chicago 6. (OWB; OWP)

Machine Work Station Equipment

Because of the importance of good physical arrangements of machines, work areas, and record housing facili-

ties in creating efficient work stations, manufacturers of some of the major items of equipment involved are listed below. The following codes are used to indicate the types of products offered:

MD—Machine desks.
MI—Miscellaneous.
MS—Machine stands.
MT—Machine tables.
NI — No information available at press time on current products.
PD—Posting desks.
PS—Posting stands.
PT—Posting trays.
TD—Tub desks.
TF—Tub files.

The Acorn Co., 4605 W. 21 St., Chicago. (MD; MS; MT; PT; TF)

Acme Visible Records, Inc., Crozet, Va. (PD, PT, TD)

R. C. Allen Business Machines, Inc., 678 Front Ave., N. W., Grand Rapids 4, Mich. (MD; MS; PD; PS; PT)

All-Steel Equipment Inc., 100 Griffith Ave., Aurora, Ill. (MD, PD)

Art Steel Co., Inc. 170 W. 233 St., New York 63. (MD, MS, MT)

Automatic File & Index Co., 549 W. Washington Blvd., Chicago 6. (PT, TF)

Browne-Morse Co., Muskegon, Mich. (MD)

The Buckstaff Co., 1122 S. Main St., Oshkosh, Wis. (MT)

Burroughs Corp., Todd-Hadley Div., 6071 Second Ave., Detroit 32, (MD, MS, PD, PS, PT, TF)

Business Efficiency Aids, 8114 N. Lawndale Ave., Skokie, Ill. (PS, PT, TD, TF)

Cole Steel Equipment Co., Inc., 415 Madison Ave., New York 17. (MS)

Columbia Steel Equipment Co., Fort Washington, Pa. (MD, MS, MT, PD, PS, PT, TD, TF)

Corry-Jamestown Mfg. Corp., 44 N. Center St., Corry, Pa. (MD, PD, PT)

Cramer Posture Chair Co., 625 Adams St., Kansas City, Mo. (MS)

Currier Mfg. Co., 2448 W. Larpenteur Ave., St. Paul 8, Minn. (PT; TF)

D & L Office Furniture Co., 61 W. Hubbard St., Chicago. (MD)

De Luxe Metal Furniture Co., 243 Struthers St., Warren, Pa. (MD; MS)

Dependable Mfg. Co., 2407 Fort Crook Rd., Bellevue, Neb. (MS)

Desks of America, Inc., P. O. Box 6185, Bridgeport 6, Conn. (MT)

Diebold, Inc., 2011 Mulberry Rd., Canton 2, Ohio. (PD, PS, PT)

Tools of the Office

Dorset Steel Equipment Co., 2514 W. Dauphin St., Philadelphia 32. (MD; MT)

Durable Metal Products Co., 38-42 Review Ave., Long Island City 1, N. Y. (MT)

Excellent Cabinet Works Co., 415 Withers St., Brooklyn 22, N. Y. (MT)

Louis H. Farber Co., 31 E. Congress St., Chicago 5. (MS)

Ferris Business Equipment, Inc., 45 Seymour St., Stratford, Conn. (TF)

Garrett Tubular Products, Inc., P. O. Box 237, Garrett, Ind. (MD; MS)

The General Fireproofing Co., 413 Dennick Ave., Youngstown, Ohio. (MD, MS, MT, PD, PS, PT, TD, TF)

The Globe-Wernicke Co., Norwood, Cincinnati 12. (MD)

Harrison Steel Desk & File Co., 4718 W. Fifth Ave., Chicago 44. (MD)

Harter Corp., 80 Prairie Ave., Sturgis, Mich. (MS)

Haskell, Inc., 303 E. Carson St., Pittsburgh 19. (MD, MS, MT, PD)

Hedges Mfg. Co., 2931 Wentworth Ave., Chicago 16. (TF)

Imperial Desk Co., 1312 W. Florida St., Evansville 7, Ind. (MD)

Indiana Desk Co., Inc., 1226 Mill St., Jasper, Ind. (MD)

Intasco Corp., 3021 Carroll Ave., Chicago 12. (PS, PT)

Invincible Metal Furniture Co., 842 S. 26 St., Manitowoc, Wis. (MD)

Jasper Office Furniture Co., 13th & Vine Sts., Jasper, Ind. (MD, PD)

Jasper Table Co., Inc., 206 Main St., Jasper, Ind. (MT)

KOL, Inc., 2323 Ellis Ave., St. Paul 14. (MS, MT)

Karl Mfg. Co., 32-24 Ionia Ave., S. W., Grand Rapids 2, Mich. (MS, MT)

King Posture Chair Co., 953 S. Raymond Ave., Pasadena 2, Calif. (MT)

Le Febure Corp., Cedar Rapids, Iowa. (MD, MS, MT, PD, PS, PT, TD, TF)

Lit-Ning Products Co., 3907 Duquesne Ave., Culver City, Calif. (PS, PT)

Logan Business Products, Inc., Vue-Fax Div., 655 Main St., Westbury, L. I., N. Y. (PD, TF)

The Marshallan Mfg. Co., 1061 W. 11 St., Cleveland 13. (MS, MT)

Maso Steel Products, 53 W. Jackson Blvd., Chicago 4. (MS, MT, PT)

Metalstand Co., 7520 State Rd., Philadelphia 36. (MS)

Modern Steelcraft, 230 Fifth Ave., New York. (MS, MT)

Monarch Metal Products, Inc., New Windsor, N. Y. (TF)

Monroe Calculating Machine Co., 555 Mitchell St., Orange, N. J. (MS)

Morval Corp., Herkimer, N.Y. (MD)

Myrtle Desk Co., P. O. Box 1750, High Point, N. C. (MD, MT, PD)

The National Blank Book Co., Holyoke, Mass. (MS, PS, PT)

Nemes Furniture Factory, 2631 N. Lehmann Court, Chicago 14. (MD)

Norfield Methods & Procedures, Inc., 933 S. Clinton Ave., Oak Park, Ill. (PS, PT)

Northwest Metal Products Co., 1337 E. Mason St., Green Bay, Wis. (MD, PD, TD, TF)

Nu-Craft Products Co., 321-327 Clarkson Ave., Brooklyn 26, N. Y. (PS, PT)

Orna-metal, Inc., 2412 S. Seventh St., St. Louis 4. (MS)

Peerless Steel Equipment Co., 6600 Hasbrook Ave., Philadelphia 11. (MD, PD)

Posting Equipment Corp., 1721 Elmwood Ave., Buffalo 7. (PS, PT, TD, TF)

Quigley Furniture Co., 62 Foster St., Whitesboro, N. Y. (MS, MT)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. (MD, PD, PS, PT, TD, TF)

J. K. Rishel Furniture Co., 1201 W. Third St., Williamsport 19, Pa. (MD, MS, MT, PD, TF)

Riteform Chair Co., Inc., 2300 Ellis Ave., St. Paul 5. (MT)

W. T. Rogers Co., 518 Division St., Madison 4, Wis. (MD)

Royal Metal Mfg. Co., 1 Park Ave., New York 16. (MD, MS)

Security Steel Equipment Corp., Avenel, N. J. (MD)

The Shaw-Walker Co., Muskegon, Mich. (MD, MS, PD, PS, PT)

The C. E. Sheppard Co., 44-01 21st St., Long Island City 1, N. Y. (PT)

Sherman-Manson Corp., Celina Rd., St. Marys, Ohio. (MS, MT)

Standard Furniture Co., Herkimer, N. Y. (MD, PD)

Stationers Guild of America, 1421 Chestnut St., Philadelphia 2. (PS, PT)

Steelcase, Inc., 1491 Division Ave., S., Grand Rapids 2, Mich. (MD)

Steel-Parts Mfg. Co., 4630 W. Harrison St., Chicago 44. (MS, MT)

Stempel Mfg. Co., 2830 Roberts St., Dallas 3. (MT)

Stewart Office Furniture Co., 6523 N. Hoyne Ave., Chicago 45. (MT)

Stolper Steel Products Corp., Menomonee Falls, Wis. (MS, MT)

Sun Engineering & Mfg. Co., Inc., Pinellas International Airport, St. Petersburg, Fla. (MT)

Systems Sales Co., P. O. Box 343, Binghamton, N. Y. (MD, TD)

Tiffany Stand Co., Inc., 7350 Forsyth Blvd., St. Louis 5. (MS, MT)

Toledo Guild Products, Inc., 228 Fassett St., Toledo 5, Ohio. (MT)

The Toledo Metal Furniture Co., 1100-1200 Hastings St., Toledo 7, Ohio. (MS)

Underwood Corp., 1 Park Ave., New York 16. (MS, PS)

The Victor Safe & Equipment Co., Inc., 315 Fourth Ave., New York 10. (PD)

Visirecord, Inc., Copiague, L. I., N. Y. (MD, PD, PT, TD, TF)

Wassell Organization, Inc., Sylvan Ave., Westport, Conn. (PD)

Watson Mfg. Co., 63 Taylor St., Jamestown, N. Y. (TF)

Welch Metal Products, Inc., 8557 San Fernando Rd., Sun Valley, Calif. (MS)

Wells Furniture Mfg. Co., Laurel, Miss. (MT)

Wilson Jones Co., 209 S. Jefferson St., Chicago 6. (PS, PT)

The Worden Co., 200 E. 17 St., Holland, Mich. (MD)

The Wright Line, Inc., 160 Gold Star Blvd., Worcester 6, Mass. (TF)

Yawman & Erbe Mfg. Co., P. O. Box 880, Rochester 3, N. Y. (MD, PD, PT, TD, TF)

Addressing Equipment

THE FLOW of information through the office ends in many outlets. Some information reaches a dead end—in the files. Some of it is fed back into the work system to be used again. Much of it, however, is ultimately directed outside the company. While it may be carried by telephone or telegraph line, or by person to person in conversation, the bulk of it passes into the hands of the United States Post Office Department.

Addressing of mail, therefore, is a function the office must perform accurately, and if the volume of mail is high, it must perform it quickly if it is to keep its costs within reasonable limits. In a big company, it is a major operation.

Individual typing—and even manual writing—of addresses is still necessary in many types of business correspondence. Nevertheless, means have been found to eliminate some addressing operations, and to reduce the time and effort required in many others.

For example, the conventional business letter requires the typing of two addresses, one on the letter itself, one on the envelope. Yet more and more companies are making use of the window envelope, permitting the address on the letter to show through and serve in lieu of the address formerly typed on the envelope.

Naturally, this procedure requires care in placing the address on the letter, so that it will coincide with the window. But this is not a difficult problem, especially, if the stationery or form has guide marks to indicate the proper location.

The obvious advantages of the window envelope are two: it eliminates one addressing, and it avoids completely the danger of getting mail in the wrong envelope.

Window envelopes have not become as popular for ordinary correspondence as they have for the mailing of forms. Presumably, this reluctance reflects a feeling that the window envelope is fit only for bills or impersonal business forms and that individual correspondence rates a greater show of courtesy. Nevertheless, business is taking more and more short cuts, even in individual correspondence, and it may one day accept the window envelope even for the individual letter.

Another obvious way to reduce the addressing operation is to use post cards wherever possible. Owing to their obvious lack of privacy, post cards are not suitable for most individual correspondence, but they are adequate for use in many routine matters. They are being widely used (in punched card form) for billing by utility companies, for acknowledgments of orders, and for many other purposes in which individual letters are not required.

When addresses must be typed on both a letter (or form) and an envelope, both addresses may be prepared at a single typing, using one typewriter for one address and a "slave" typewriter (operating under the control of the first) for the other. Such an application, of course, is highly specialized and special equipment is required.

However, most equipment designed for addressing is intended to work with names and addresses from a list that is contracted fairly often. It uses addresses in some master form which allows them to be processed rapidly. This master form (such as a spirit master, a stencil, or an embossed plate) is prepared in advance and can be used for repeated addressing.

In large mailing operations there has been a strong trend toward consolidating the addressing function with some other operation. Examples of these are the following:

Certain types of addressing machines may be operated by punched cards. This feature allows for the automatic selection and rejection of cards from a master list of potential addresses. In some types, the address is carried on or attached to the card as a small spirit master. In other types, the cards may be used to actuate a printing mechanism, following normal punched card routines. And in still another type the address (which in this case is printed on the card) is scanned by a photoelectric "eye" and printed on address tapes or labels by the facsimile process.

In cases of this sort it may be said that addressing has been "integrated" with other operations, since the cards are of the same type as those used in punched card installations elsewhere in the company, and since the cards may have been, in any case, prepared automatically as a result of some other operation.

Selective addressing saves sorting

The ability of the addressing medium — whether a punched card, embossed plate, or whatever — to carry selection instructions is a great time saver. Embossed plates have long carried code systems in the form of notches which enable addressing machines to select or reject them according to predetermined pattern.

An example: Codes used by a publishing company may indicate date of subscription expiration, size of company, type of company, and other information of interest. Thus, the codes can be used to address selected groups. While this type of coding is so familiar as to be taken for granted, it should be remembered that it represents an early product of systems analysis. It is a short cut by which a type of sorting operation has been combined with an addressing function.

Many types of addressing equipment are offered. Discounting the very simplest (which must include ordinary

rubber hand stamps used for addressing in offices which send the bulk of their mail to a particular address), these range from small hand devices in which addresses are carried on roll form spirit masters to high speed printers used for output from electronic computer systems.

In addition to the punched cards mentioned above, there are three basic printing methods used in most addressing equipment. These are embossed metal plates, spirit masters, and stencils. Certain other machines use special transfer processes that resemble the spirit method. And in still other cases an "electrostatic" method is used in which an address is "printed" invisibly on a label in the form of an electrical charge, this label then being exposed to a spray of ink carrying an opposite electrical charge; the ink is attracted to the paper, forming the desired letters and numerals. The electrostatic method appears to be potentially the fastest available, with possible speeds of thousands of lines a minute, and one of its most promising uses is as an output device for use with electronic computers.

Three printing methods widely used

Most of these special methods are used in elaborate equipment intended for the production of huge volumes of work.

The three primary methods — embossed plates, spirit masters, and stencils—are not as fast, but they are adaptable to small, inexpensive equipment, as well as to complex operations, and they offer great variety.

Some machines are small and manually operated; they do nothing more than address envelopes—or, sometimes, an address tape or set of labels which will later be affixed to envelopes or packages.

As the machines become more complex, they acquire such features as devices to select and reject coded addresses, automatic feeds, counters, daters, perforators, and so on. They are generally powered by electricity.

Still larger machines perform a variety of other operations as well. Some machines are capable of printing complete letters, including the letterhead, text, and signature; in some cases, a variety of colors may be printed at once. This type of machine is, in effect, a small printing press which is equipped to address at the same time that it prints.

In the most versatile machines, addressing may be almost incidental to the main function of the machine. Such equipment, for example, may punch and imprint cards, number, sort, accumulate totals, and provide carbon copies of addressed material.

The possibilities for integrating addressing equipment into office systems are augmented by the fact that plates, masters, and stencils used in even very simple machines can be prepared automatically. If a typewriter is used, addressing may be controlled by punched tape or punched card inputs. Graphotypes for the preparation of embossed metal plates may be controlled similarly.

In a further extension of integration, address labels may be prepared by systems duplicators, especially those of the spirit type, using a master originally prepared for some other bookkeeping purpose. Moreover translucent masters used in diazo process copying equipment may be included as one of the sheets in a set of carbon interleaved forms. In such cases, although standard equipment is not used, an equivalent result may be obtained through other types of equipment.

The Manufacturers

Following is a list of the principal manufacturers of addressing machines and systems. The following explanatory codes are used to indicate the nature of products offered:

E—Electric machines.

ES—Machines using an electronic scanning principle such as facsimile.

M—Manual machines.

MI—Miscellaneous.

NI — No information available at press time on current products.

R—Machines using the relief printing principle — that is, printing from embossed plates, type, etc.

SP—Machines using the spirit duplicating principle.

In a large company, the addressing of mail is itself a large-scale operation. Many types of addressing equipment can be used to direct mail to regular addressees. Some units can also handle other functions, such as sorting (in the form of selective addressing), counting, perforating, and even printing finished letters in several colors, complete with signature.

(Picture by courtesy of Celanese Corp.)

ST—Machines using the stencil duplicating principle.

A.M.F. Systems, Inc., 3026 Franklin Blvd., Chicago. (NI)

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17. (ES; MI—special transfer method; R—E, M)

Adrema-Werke. SEE: Efficiency Machines Corp.

Alden Systems Co., Alden Research Center, Westboro, Mass. (NI)

Cheshire, Inc., 1644 N. Honore St., Chicago 22. (MI—Machines for affixing address labels to mail)

Dashew Business Machines, Inc., 5886 Smiley Drive, Culver City, Calif. (R—M, and Special, with inputs from punched cards)

The Dick Mailer Co., 137 W. Tupper St., Buffalo 1, N. Y. (MI—Address label machines)

Du Prints, Inc., 1502 S. Main St., Los Angeles 15. (SP—E; M)

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. (MI—Special electronic system using punched cards)

Efficiency Machines Corp., 87 Transverse Rd., Garden City, N. Y. (R—E)

The Elliott Addressing Machine Co., 143 Albany St., Cambridge 39, Mass. (ST—E; M)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. (MI — Tape-controlled typewriters)

The Heyer Corp., 1850 S. Kostner Ave., Chicago 23. (SP—M)

International Business Machines Corp., 590 Madison Ave., New York 22. (MI—Electrostatic label printers)

Krengel Mfg. Co., Inc., 227 Fulton St., New York 7. (R—NI)

Master Addresser Co., 6500 W. Lake St., Minneapolis 26. (SP—M)

The Multistamp Co., 527 W. 21 St., Norfolk 10, Va. (ST—M)

Nettle Mfg. Co., 27 Huntington Ave., Boston 16. (R—M)

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16, N. Y. (R—E; M)

S & M Distributing Co., 3875 Garland St., Wheat Ridge, Col. (SP—M)

Scriptomatic, Inc., 300-16 N. 11 St., Philadelphia 7. (SP—E; M)

Visirecord, Inc., Copiague, L. I., N. Y. (SP—M)

Weber Marking Systems, Div. of Weber Addressing Machine Co., Inc. 215 E. Prospect Ave., Mt. Prospect, Ill. (ST—E; M)

Chauncey Wing's Sons, 78 Pierce St., Greenfield, Mass. (MI — Label affixing machines)

Dictating and Transcribing Equipment

THE DICTATING machine is fast overcoming the prejudices which for a time kept its virtues from being recognized. It is true that earlier machines did not give particularly good service, and some of the complaints were fully justified.

But technical problems have been eliminated. Most of the resistance to the machine—where it still exists—has nothing to do with the machine itself. The machine has proved its value.

Specifically, the dictating machine is capable of eliminating one very obvious duplication of effort in the office. When an executive dictates a letter to a secretary, she must write the letter once in her notebook and again on the typewriter. There can hardly be any dispute that this is indeed a duplication.

In the view of some, this extra effort is outweighed by certain other considerations. For example, an executive may rely on his secretary to remind him, during his dictation, of certain details of the case in hand, or of company policy, which he may not have reviewed recently. He may depend on her to know his particular preferences in how he wants his letter signed—"Very truly yours," "Yours truly," and so on, and to be familiar with his special habits of letter style and layout. He may expect her to look up names and addresses which he would otherwise have to take time to look up and dictate to a machine. He may rely on her ability to gather necessary materials from the files. In other words, where there is real team work between an executive and his secretary, she can save him considerable time in his dictation—in return for which she must write his letters twice each.

For a quick index to the "Tools of the Office" section see page 61

There is also the matter of prestige. Many an executive seems to feel that there is something inherently undignified or even insulting in dictating to a machine rather than to a human being.

But all of these considerations overlook one essential point. Unless the secretary's presence is essential to the executive *at the time of dictation,* as in answering questions about past aspects of a case, person-to-person dictation is grossly inefficient.

Use of a dictating machine does not, after all, deprive the executive of the services of his secretary. What it does is to offer him many advantages not otherwise obtainable.

First of all, it gives him freedom to dictate when he chooses, without having to adjust his schedule to that of the secretary. This means he can dictate answers to letters as he opens his mail, while his thoughts are fresh. He does not have to save his correspondence for a more prolonged dictating session later in the day. He can dictate after hours or on week-ends without having to inconvenience his secretary or to use special services.

Peak work loads can be distributed

Second, if he is faced with a peak load rush of correspondence, he can, if need be, turn over some of his dictated letters to a second or third typist, who will be able to transcribe from the machine what she could not get from the shorthand notes of the regular secretary. In other words, the work load can be distributed more evenly among the typing staff in rush periods. This, of course, can mean faster service.

Third, use of the machine permits the secretary to do more work during the day. She is not faced with the necessity of writing letters twice. Nor must she sit idly in the boss' office while he handles an interrupting telephone call or visitor. Her time is used more efficiently.

The executive may reason that he is paying her for this type of service and that this waste of time is no concern of hers (though it may legitimately be the concern of those who determine the company budget). But it may be of real concern to him that she have the time available to do additional work in lieu of sitting in his office unnecessarily.

In short, unless the executive must depend on his secretary to help him during dictation, he can work far more efficiently if he uses a dictating machine.

It seems reasonable to conclude that

the objections raised by some executives to the machine stem from one of two causes: a feeling that use of the machine in some way lowers prestige, or unsatisfactory experience with a previous machine.

The former is a personal consideration beyond the scope of this article. The latter, however, invites the question as to what really may have caused a previous experience to be unsatisfactory.

In some cases, the executive may have used an old machine, or a poor one that was incapable of giving him the service he required. Perhaps the fidelity of sound was not adequate, so that the typist had to interrupt him later in the day to inquire what he had said. Perhaps the controls were inconvenient or hard to operate.

Equipment has been improved

But modern machines have largely overcome this problem. Fidelity is good on any well-made machine, and the controls are convenient, being usually placed on the microphone itself where they need not be reached for.

The fault, thus, is less likely to have been that of the machine than of the dictator himself. There is definitely a technique required in using a dictating machine. It is not difficult to learn, but if it is not followed, one need not wonder if results are unsatisfactory.

In the first place, the executive must speak clearly and with an even volume of sound, being careful not to slur final syllables or to drop his voice so that "a" sounds like "the," and so on. This, of course, is ordinary common sense, and it applies equally to the technique of dictating to a secretary.

In the second place, he must be sure to give adequate instructions. If he expects that his correspondence will be transcribed by a typist unfamiliar with technical words, he should spell them out. He should be particularly careful with numbers. He should make clear how many carbon copies are to be made, if the letter is not routine. If he is giving instructions to the typist, he should be careful to address her with the word, "Operator," so that she will not type the instructions as part of the letter before she realizes what has happened.

And, above all, he should know how to use the correction facilities. If at any point he wishes to make a correction in the text, or if he remembers in the midst of dictation that he wants an extra copy made, he should press the correction key (if that is the method used with his machine), or be sure to note the correction on a log sheet. Obvious as this point is, it is often overlooked, with the result that the typist gets well into the letter before she realizes that a correction is to be made. Her work and time are thus wasted, and she must begin over.

Such wastefulness can be avoided by the executive if he will learn the few simple requirements for effective machine dictation. He should also be sure to indicate letter length by whatever means are provided, so that the typist can space it properly on the page without having to make a wasteful trial run.

Dictating machines may be used on an individual or a collective basis. The executive who uses a private machine installed in his own office has not changed the fundamental routines of getting out his correspondence—he has merely introduced a mechanical improvement designed to make it faster and more convenient.

But, used collectively, machines can further reduce personnel costs and allow other savings.

In an office where individuals do relatively little dictating, machine facilities can be shared. This sharing may be accomplished in at least two ways.

One of these is for all of the dictators in a group to use the same dictating machine, either by working with it at a central location or by having it brought to them when they need it. The modern dictating machine is small and light of weight and can easily be moved. If it is mounted on a stand, the stand can be rolled from place to place.

The other method is the use of network dictation facilities. In this case telephone facilities are connected to one or more centralized dictating machines. Standard telephone systems can be used with some equipment. In other cases, private intra-company telephone systems may be used, and in others, direct wiring can be provided between the dictating stations and the central recorder.

Usually the recording machines are selected automatically, so that a man who picks up his phone while one unit is busy is switched automatically to another that is free. If all units are busy, he receives a busy signal. His telephone is equipped with full facilities for controlling the machine, including correction indications and stop/start controls.

Network dictation is capable of providing real machine efficiency if it serves a number of executives who do relatively little individual dictating. It permits a sharing of the work load by the typists, and thus reduces the number of typists actually required for a given number of executives.

One of the important trends of the day is the adaptation of telephone and intercommunications facilities to permit their use with dictating equipment. (This, of course, is one more example of the "integration" of office systems which is proving so rewarding in reducing office costs.)

Machines used individually may be suited for dictation only, for transcription only, or for both.

Actually the differences are slight. The chief considerations are that the dictator does not require certain transcribing facilities, such as foot pedal or typewriter controls, while the typist does not need a microphone. Most of these facilities are accessory and do not greatly affect the price of the instrument itself. They can be used on one machine. Thus, a combination machine is considerably less expensive than a pair of dictating and transcribing models.

The combination machine can be very useful in certain circumstances, but it is not ideal for handling large volumes of correspondence, unless the executive's schedule is such that he can use the machine when the secretary does not need it for transcribing. However, if there is no conflict of this sort, it provides the most inexpensive type of machine dictation.

Separate units give most flexibility

For most office uses requiring individual machines separate dictating and transcribing units are preferred. Such an arrangement eliminates conflicts in scheduling between dictator and transcriber and permits full-time use of the equipment. Naturally, if any type of transcribing pool is set up, it is not necessary to have as many transcribing units as there are dictating units.

Modern dictating machines record on either a magnetic or a plastic record. The record may take the form of a belt or a disk, and if the recording method is magnetic, it may also assume the form of a tape or a sheet of paper.

The principal argument for magnetic recording— which very closely re-

sembles the techniques used in home tape recorders—is that the recorded material may be erased at will. This permits indefinite re-use of the recording medium, and it also allows the dictator to erase errors and dictate corrected material in its place. Although intended for re-use, magnetic media can keep records permanently if needed. In at least one type of magnetic machine—one using magnetic paper—two "copies" of the dictation may be made simultaneously.

Plastic records are usually intended to be used once and discarded. The material is inexpensive enough that the manufacturers of this type of equipment consider this procedure completely economical. However, some of these records can be resurfaced to allow further use. Plastic records provide a permanent record of dictation, if that is required.

The Manufacturers

The following list shows the major manufacturers of office dictating and transcribing equipment. While numerous standard tape recorders can be used in the office, they are not listed here unless the manufacturer has stated that this type of equipment is modified to provide the additional facilities normally expected on office equipment.

The following codes indicate the type of equipment available:

MB—Magnetic belt machines.
MD—Magnetic disk machines.
MP—Magnetic paper machines.
MT—Magnetic tape machines.
N—Network systems.
NI — No information available at press time on current products.
PB—Plastic belt machines.
PD—Plastic disk machines.
TR—Tape recorders modified for office use.

American Dictating Machine Co., Inc., 65 Madison Ave., New York 16. (MD; N)

Amplifier Corp. of America, 398 Broadway, New York 13. (TR)

Ampro Corp., 2835 N. Western Ave., Chicago 18. (TR)

Comptometer Corp., 1735 N. Paulina St., Chicago 22. (MB)

DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y. (MT; TR)

Dictaphone Corp., 420 Lexington Ave., New York 17, N. Y. (N; PB; TR —miniature)

Thomas A. Edison Industries, Mc-Graw-Edison Co., West Orange, N. J. (N; PD)

The Gray Mfg. Co., 16 Arbor St., Hartford 1, Conn. (N; PD)

Magnedisk Dictating Co., 52 E. Brink St., Crystal Lake, Ill. (MD; N)

Magnetic Recording Industries, 11 E. 16 St., New York 3. (MD; N)

Miles Reproducer Co., Inc., 812 Broadway, New York 3. (N; PB)

Mohawk Business Machines Corp., 944 Halsey St., Brooklyn 33, N. Y. (TR —Miniature)

Oerlikon Tool & Arms Corp. of America. SEE: Olkon Corp.

Olkon Corp., Vanguard Business Machines Div., 150 Sylvan Ave., Englewood Cliffs, N. J. (N; MP; MT; TR)

Pacific Instruments Corp., 7046 Hollywood Blvd., Los Angeles, 28 (MB)

Peirce Dictation Systems, 5900 N. Northwest Highway, Chicago 31. (MB; N)

Pentron Corp., 777 S. Tripp Ave., Chicago 24. (NI)

Scribe Sales Co. of Chicago, 5022 W. Madison St., Chicago 3. (MT)

Shepard Laboratories, Inc., 480 Morris Ave., Summit, N. J. (MT)

The SoundScriber Corp., North Haven, Conn. (N; PD)

Vanguard Business Machines. SEE: Olkon Corp.

Duplicating and Copying Equipment

THERE SEEMS to be no limit to the possible uses of duplicating and copying equipment. Spirit and stencil duplicators, of course, have long been employed to make multiple copies of reports, notices, and the like for general distribution. Today many duplicators are being used for what is called "systems" work.

Information on a spirit master, for example, can be transferred selectively to different forms covering the same transaction. In such a use, the duplicator serves to transfer repetitive information from form to form in the course of the work flow. In essence, this is an elementary form of what, in its more complicated phases, is called "integrated data processing."

Office copying machines have also grown in popularity. By this term is meant machines which copy original material directly. Such equipment permits an individual to make a copy of material passing through his hands so that the next man in the routing system does not have to wait for him to finish with it. It can simplify correspondence: A simple answering note can be made on an incoming letter, the original then being returned to the sender. The copying machine records the original—and the note—for file purposes.

Systems planners have devoted a great deal of energy in recent years to reducing the time and effort spent in the modern office on paper work. While much of their effort has been aimed at reducing the number of papers, it has been found that one means of curtailing the work load is to consolidate a number of related reports into a single form or series of forms which can then be copied or duplicated to produce the necessary number of copies.

Thus, modern systems planning, while it has tended to reduce the number of individual documents prepared in the office, has tended to increase the need for copying and duplicating equipment. It cannot be said that this result was planned deliberately. Rather it should be observed that good systems planning takes into account the potentialities of office equipment and devises systems that make the best use of it. Modern copying and duplicating equipment has made possible new systems because it provides, quickly and inexpensively, many services that formerly could not be obtained without calling on outside help.

The developments in equipment are far more extensive than most office people seem to realize. For example, this magazine recognizes at least thirteen distinct processes which can be used for copying or duplicating, not counting such obvious means of producing extra copies as the use of carbon paper, automatic typing, conventional printing methods, and automatic outputs from integrated data processing and communications systems.

Seven of these may be called "copying" process. That is, they make more or less exact copies of original material. They are intended, usually, for short runs—for making single copies, rarely for more than half a dozen or so. They are usually much slower than duplicating processes, and individual copies are more expensive, but they can reproduce art work, letterheads, drawings, pictures, and other material without requiring the laborious preparation of a

special master, and their work is considerably less expensive than manual copying would be.

The seven processes considered in this group are the diazo, Electrofax, facsimile, photocopy, Thermo-Fax, Verifax and xerographic processes. Each of these will be described below. Each differs from each other in some significant way. For example, one process does not readily copy the color yellow; another is not sensitive to ordinary blue ballpoint pen ink; some processes print on paper much like ordinary bond paper, while others require sensitized paper; the cost of a letter-size copy may range from less than a penny to as much as ten cents. Yet each process has its special place in the scheme of things. If it cannot perform certain functions as well as others, it compensates by having superior qualities in other respects.

Processes differ in many ways

It is important to recognize the differences among these processes. Many individuals refer to almost all copying processes indiscriminately as "photocopying." Such a designation is not only inaccurate, but—more important—it indicates that the special opportunities offered by each process are not properly appreciated.

The other six processes described in this section are the true "duplicating" processes. These methods are used to make hundreds, or even thousands, of copies at high speeds, and at relatively low cost per copy. The copies are made from some previously prepared master or stencil, or from some equivalent, such as metal or rubber type. The processes listed here are designed for use in the office. In many cases, the same methods are used, on a larger scale, by commercial printing houses to print magazines, books, and other material.

The duplicating processes considered here are gelatin, offset, relief, spirit, stencil, and three that, being technically similar, are reviewed as a single process — Azograph, Chemograph, and Transograph. These are referred to as "special liquid" processes.

As in previous years, there has been a strong trend toward development of "compatibility" between two or more different processes. Usually this means that a master or stencil for a duplicating process can be prepared by one of the copying processes.

The obvious advantage of such an approach is that it eliminates direct preparation, either manual or on a typewriter, of a master or stencil, and makes it possible for certain kinds of original art work, which may include photographs, to be transferred directly to a master or stencil for multiple-copy reproduction.

To illustrate, masters for use on office-type offset duplicators may be prepared by the diazo, Electrofax, facsimile, photocopying, Verifax, and xerographic processes. This means that a typist, instead of preparing a master directly, may merely type an ordinary copy (adding any art work desired) and have the master made from this copy.

Similarly, stencils can be made by the facsimile and photocopying methods, and spirit masters may be prepared by xerography.

In addition to pairing a copying process with a duplicating process, some copying processes can be made to work with other copying processes. For example, the diazo process requires that material to be copied be on a paper translucent enough to permit light to pass through it (and this means, of course, that material must be printed on only one side). Thus, in copying two-sided or opaque originals, a translucent copy must be made first. This can sometimes be done on the diazo machine itself, but it can be done also by the photocopying method, and some machines are themselves capable of preparing both photocopies and diazo copies. The xerographic process can also be used for this purpose.

Because each copying and duplicating process differs from all others not only in its individual characteristics, but also in its ability to be paired off with other processes, it is obvious that there is much room for systems analysis in making a selection of equipment.

Suppose, for example, that an office needs quick copies of material that exists in typed or pencil form but has no need of preparing a master from them; suppose, too, that it has little other copying work. Such a company might make effective use of a process that does not pick up ordinary fountain pen ink but does work quickly with pencil or typewritten matter, taking advantage of the speed of the process and not being inconvenienced by its inability to register fountain pen ink.

On the other hand, if the company needs to copy material written by fountain pen (when it cannot prescribe the kind of ink to be used—as in copying incoming correspondence), it will need another type of copying machine which is sensitive to blue fountain pen ink, even though the copies may be more expensive and slower to produce.

Since there are several processes that meet this requirement, a further consideration would be whether or not the company wishes to prepare duplicating masters, and if so, for which process. The quality of the finished work may enter into the decision, also, for some processes turn out work of better appearance than do others.

If a company has an operation which calls for copying one-sided original material, it may be able to use an inexpensive process that makes such copies rapidly if they are on material that passes light through it. If too many of the original papers are too opaque, however, some other process may have to be used.

In short, it is impossible to be sure of selecting proper equipment without knowing the special qualities of each of the copying and duplicating processes. Some offer advantages of speed, some of quality appearance in the finished work, some of low cost, some of the ability to copy drawings, some of ease in operation by inexperienced personnel, some of the capacity to enlarge or reduce, some of the ability to print more than one color, and so on. Each process has its own particular uses, and none is capable by itself of performing all kinds of copying or duplicating operations.

The thirteen basic processes are described below:

The Copying Processes

Diazo

The diazo process makes use of a dye formed by the combination of two chemicals. The equipment and papers used are so designed that these chemicals meet each other only in the areas where lines (such as those forming letters or lines in drawings) are to appear.

To accomplish this result, either of two methods may be used:

(1) The two chemicals may be incorporated in the sensitized coating of a sheet of copy paper, but are prevented from interacting by the presence of a "stabilizing" chemical. When this sheet of paper is exposed to light, one of the chemicals (a diazonium salt, or "diazo") is broken down so that it cannot com-

bine with the other chemical (known as a "coupler"). Thus, if a sheet of paper containing written material is placed over the sensitized sheet and the two are exposed to an ultra-violet light, wherever light passes through the paper the copy sheet will be unable to show a dye.

However, the lines of the written material prevent light from passing through wherever those lines are to appear on the copy. The diazo is thus not broken down and it will later combine with the coupler to produce the dye.

In order to bring the chemicals together, the effect of the stabilizer must be cancelled, and this is done by bringing the exposed sheet into contact with an ammonia vapor. Once the stabilizer has been neutralized, the diazo reacts with the coupler to form the dye, making the final copy. This process is sometimes known as the "dry" process, but this term is misleading, inasmuch as it is used to apply to a variety of quite different processes.

(2) In the second method, only the diazo is contained in the coating of the sensitized sheet of copy paper. The sheet is exposed as in the first method, causing the diazo to break down where dye is not wanted. The sheet is then brought into contact with a liquid solution. This solution contains the coupler, and the dye-forming reaction proceeds as before to produce the final copy. Since a solution is used, this method was formerly referred to as the "wet" process. This term, however, is also misleading, for equipment using this method applies only a very light coating of solution to the copy paper, and enough heat is provided that the copy emerges in a condition which is, for all practical purposes, dry.

Original copy must be one-sided

Since light must pass *through* the original material, the diazo process does not copy two-sided or opaque originals directly. However, most office stationery is actually translucent enough to permit light to pass through it, and problems usually arise only when material has been written on both sides of the original.

In such cases, a translucent copy must first be made. This can be done in the diazo machine itself, depending on the particular type of machine and the supplies available. Alternatively, the translucent copy may be prepared by the photocopy, facsimile, or xerographic methods.

The final copies may be made on paper of several colors, and the color of the printing may itself be varied. Colors are chosen by means of an appropriate selection of copy paper. Sometimes five different colors may be obtained on a single print, but this requires the use of hand application of special solutions.

Offset masters may also be prepared by the diazo process.

Diazo equipment is designed for continuous feeding of copy. It does not normally copy pages from bound books, since the material to be copied is usually fed into the machine itself. It can copy art work, blueprints, drawings, letterheads, and other material. Some equipment can accept copy up to 54 in. wide. Whatever the width of the throat, the speed of advance may be varied, depending on the machine, from about 5 to 60 feet a minute. In copying correspondence, therefore, a small machine may prepare about 200 copies an hour. The cost of letter-size copies is usually estimated at about one cent.

The process is most effective when original material is written in sharp lines with an opaque ink or pencil. Blue and purple inks, for example, are not usually as opaque as black inks and may not reproduce as well. While most typewriter ribbons make sufficiently opaque impressions, quality can be improved by typing with a sheet of carbon paper (especially a yellow or orange carbon) face up under the original. Some special purple pencils which allow the passage of light can be used to note items on an original which will *not* be copied.

When using the equipment, the operator may vary its speed to obtain optimum results. At excessively high speeds, copies will have dark backgrounds, while at lower speeds, the entire copy will tend to bleach out. The correct speeds may be estimated easily with a little experience.

Electrofax

The Electrofax process, which has been developed by the Radio Corporation of America, is used particularly for preparing offset and photoengraving printing plates.

A special Electrofax coating is applied to the plate. This coating has a photoconductive pigment. When it is to be used, it is given an electrostatic charge. The material to be copied is placed in a camera or equivalent and its image is projected onto the plate. (Contact exposure, using a positive or negative transparency, is also possible.)

The electrostatic charge on the plate is reduced by the effect of light on it, so that the image is reproduced invisibly on the plate in the form of electrical charges—the darkest lines retaining the highest charge.

The surface is then traversed by a magnetic brush which carries a resin powder. The powder is attracted to those areas where an electric charge remains, thus reproducing the original material. It is possible to produce negatives from positives, if desired.

The plate is then "fixed" by a few seconds' exposure to heat. The powder is thereby fused into a permanent image.

To make an offset plate, the surface is swabbed with a chemical which leaves the image receptive to greasy inks, while the background becomes receptive to water. Offset masters with a paper base, as well as metal plates, can be prepared in this manner.

The process permits the copying of all kinds of materials, including photographs, art work, typed, printed, and drawn material. It reproduces tonal gradations automatically.

While a number of machines using the principle have been developed, none are commercially available at present. It appears that the process will be both fast and inexpensive in operation.

Facsimile

The facsimile process is used for many purposes other than copying. It is used, for example, to connect the offices of telegraph companies with the offices of certain of their subscribers. Here it provides for the direct transmission and delivery of telegrams without the necessity for having them delivered by messenger. It is also used in other ways as a communications device.

However, a few models have been adapted for office use and these are used not only to prepare copies but to transfer original material to stencils or offset masters for high-speed duplication by the appropriate machines.

The process depends on a method of photoelectric scanning. The original material is wrapped around a rotating drum. The copy sheet is wrapped similarly about a second drum which rotates in synchronization with the first. As the original rotates, a narrow beam of light is reflected onto the paper in such a way that as the drum revolves, the light describes a spiral course from one end of the sheet to the other. This operation

is carried on through a large number of rotations, so that every portion of the original is scanned in this manner.

The light beam is reflected into a photoelectric cell, where it generates a current corresponding in strength to the strength of the reflected light—which, in turn, depends on whether it is being reflected from a light or dark area. The current thus generated is used to produce a corresponding current in a stylus of the second machine which passes over the copy paper in synchronization with the original light beam. As the machine is designed, the current in the stylus is stronger as it passes over areas which should be dark—lines, letters, and so forth. The copy paper is sufficiently sensitive to this current that it is slightly burned by the electrical impulses. The degree of the burn varies with the strength of the current.

Copies can be made remotely

By this method, the dark areas of the original are transmitted electrically to the copy paper. The copying machine may be at a considerable distance from the one which produces the final copy, so that the process may be used for long distance communication.

A modification of this process permits the stylus to be used to burn minute holes into a conventional stencil for use in a standard stencil duplicator. Thus the process is employed to transfer art work (including photographs), drawings, letterheads, and other material—as well as written or typed matter—to stencils for subsequent high-speed duplication.

Used with the appropriate materials, the process can also copy material onto masters for gelatin, offset, and spirit duplicators.

The process requires about three minutes to make single copies, or about six minutes to prepare masters. Single copies are estimated to cost about 4½ cents, offset masters about 20 cents.

Some new machines read copy in flat form. The material is scanned as it is fed through the machine, and the copy may be of indefinite length.

Photocopy

Photocopying is a modification of the principles of conventional photography for use in the office. It takes several forms as actually used:

(1) The "transfer" process is a contact method in which the original material is placed in direct contact with the sheet which makes the negative, and in which the negative in turn is placed in direct contact with the final positive copy sheet.

Usually, the original is placed face to face with a sheet of sensitized paper and exposed to light in a "printer." The light passes through the sensitized sheet and is reflected by the light areas on the original copy while the dark areas (the written lines) absorb the light and do not reflect it.

This light is reflected back onto the sensitized sheet, where it causes a reaction in the chemical coating of the paper, which is light-sensitive. The effect of light striking this coating is to alter it chemically so that it turns dark when it is developed.

This sheet, known as a negative, is removed from the printer (the original may then be returned to its original file or user) and placed face to face with another sensitized sheet. Both sheets are inserted into a developing unit where another chemical reaction takes place as the sheets pass through a solution. As a result of this reaction, the white areas of the negative produce corresponding dark areas on the final sheet, and these, of course, correspond exactly to the dark areas of the original. The sheets are left face to face for about fifteen seconds to complete the transfer.

This process can make a copy in about 40 to 50 seconds, although some machines can produce copies at higher speeds. The sensitivity of the paper used is a factor, as is the strength of the light employed. However, since most office photocopiers are intended to be used in the open office, where the paper is exposed to some light, a relatively slow paper is used.

The transfer process is often referred to as the "dry" process. The term is somewhat misleading, for the copy sheet actually passes through a solution. However, the process is "dry" in comparison to conventional photographic development methods in which copies are saturated to a point requiring a drying period of several hours. Copies made by the transfer process issue in a slightly damp condition but dry quickly.

A modification of photocopying, known as Verifax, is discussed separately, since it differs from standard photocopying in certain significant ways.

A recent development in office photocopiers is the introduction of papers which permit two positive copies to be made from the same negative. It is expected that ultimately it will be possible to make several copies from one negative. Another development is the ability to make offset masters with the office photocopier. While photographic methods have long been used to make offset plates, the office photocopier has not been employed for this purpose until recently.

(2) The "autopositive" method allows making a final copy directly from the original without using an intermediate negative. To permit the copy to be read normally from left to right (a "right-reading" copy), it is necessary to place the original material face up over the sensitized sheet and to expose it to light passing through the original, rather than through the sensitized sheet. This method is known as the *direct* method, whereas the transfer process described above normally uses the face-to-face *reflex* method. The direct method can make right-reading copies in one step, of course, only when the original material is one-sided and sufficiently translucent to permit light to pass through it. If these requirements are not met, the original must usually be placed face to face with the sensitized sheet and exposed as in the transfer process. This produces, of course, a copy in which the printing is reversed, and a right-reading copy can be had only by repeating the process, using the copy as the new original.

However, in at least one case, right-reading positives may be produced from two-sided originals by placing the original face up *under* the sensitized paper, covering the coated side with a special sheet of semi-translucent plastic, and directing the light through the plastic and the copy paper to the original. The effect of the plastic is to shield the coating so that it is affected chemically only by light reflected back from the original.

Standard camera can be used

(3) A standard copying camera may be used. This is not photocopying in its strictest sense, but rather a form of true photography. Use of a camera permits material to be enlarged or reduced. The process is considerably more elaborate, requiring more expensive equipment and more detailed processing.

Because a prism is normally used in the optical system to reverse the image received from the original material, office copying cameras of this type produce a right-reading image on the sensitized sheet. It is a negative, however,

with white letters on a dark background; if a black-on-white copy is needed, the process can simply be repeated, using the first copy as the new original.

The developing process used requires passing prints through solution. As a result of the procedures required, prints emerge wet and must be allowed to dry before use. Units are provided on some machines for high-speed drying.

Photocopying, whatever the method, produces exact copies of originals. It is sensitive to almost all colors and gives excellent results. It may print final copies on colored paper or on transparent or translucent film. The latter may be used in diazo process equipment. Photocopy paper can be exposed in diazo equipment if a yellow filter is used, but it is then processed in a standard photocopy processing unit; the reflex method is used.

Copies made by the transfer process cost from eight to ten cents each, approximately, while autopositives, requiring only one step, cost about half as much.

Most office photocopiers cannot copy pages from bound books, but some flat-bed models are available for the purpose.

Results may vary with the exposure used. The operator can learn easily, after a little experience, to gauge the exposure required, which varies with the type of original—adjustments having to be made for copy on papers of differing colors and differing degrees of intensity. Prints that are underexposed are generally too dark, while overexposed copies are usually bleached.

Thermo-Fax

The Thermo-Fax process operates on the principle that dark substances tend to absorb more heat than do light substances.

The paper on which copies are made is especially sensitive to heat and turns dark when exposed to it. A sheet of copy paper, which is translucent, is placed face up over the material to be copied and both are exposed in the copying unit to infra-red light. This light, on contacting the dark portions of the original material—i.e., the lines that make up the letters — generates heat, which, in turn, turns the copy paper dark in the corresponding locations, producing a copy of the original.

This is a simple method, requiring only one step. Machines using the principle are offered in the flat-bed type, which permits copying pages from bound material, and of the type in which the original sheet and the copy paper are inserted into the unit, where they pass before the light source and are then returned through a slot in the front of the unit.

(Picture by courtesy of American District Telegraph Co.)

Duplicating and copying machines are now being used widely in "systems" work, preparing complete sets of related business forms by repeating, in the proper spaces, those bits of information which must be carried over from form to form.

The newest models produce letter-size copies in about four seconds each. The copies are completely dry.

The paper used has a waxlike finish. It is of light weight, but if heavier copies are required it can be reinforced by bonding it to an inexpensive back-up paper. This can be done in the machine itself.

The paper usually employed is roughly of a buff color, but several other colors are offered. Letter-size copies cost about 5 cents each.

The process is more sensitive to some inks than to others. In general, it picks up well any ink, pencil, or other deposit which readily absorbs heat, such as those inks with a carbon base. Ordinary pencil marks and standard typing and printing are easily copied. Some ball point and fountain pen inks, particularly those of a blue color, may not be picked up at all, but carbon-base inks record readily. Inks that do not record may be used to make indications on the original that are not desired on the copy.

The amount of exposure can be varied by reducing the time of exposure, thus varying the amount of light received. If the exposure is too prolonged, copies are too dark. On the other hand, too short an exposure produces a copy insufficiently dark. The exposure required for a given copy may be gauged easily by an operator after short experience.

Verifax

The Verifax process is an outgrowth of photocopying. However, it can make copies on non-sensitized paper, such as bond, and a number of copies can be made from a single negative. For these reasons it is considered separately from conventional photocopying.

The original material is placed face to face with a sheet of sensitized paper called a matrix, as in the reflex method of photocopying. These sheets are placed on the glass surface of the copying unit, and light passes through the copy paper to the original. The light areas of the original reflect this light to the matrix, while the dark areas absorb it and do not reflect it.

Wherever light strikes the matrix, a chemical reaction occurs. The matrix is removed from the unit and placed in an "activator" solution. As a result, the areas not reached by light during the exposure are changed into a dark dye-like substance, while the areas touched by light are "fixed." As the matrix is removed from the solution, it is placed face to face with a sheet of non-sensitized copy paper and both are passed between squeegee rollers. (The copy paper does not itself pass through a solution.)

As a result of being pressed together, the dye-like substance is transferred to the copy sheet to produce the final copy. More than enough of this dye is produced to make one copy. In practice about five copies can be made from one

matrix, and it is possible to obtain more, by making slightly lighter copies.

The Verifax method can copy opaque and two-sided originals by direct contact—without enlarging or reducing. It can copy art work, letterheads, and halftones if they are of not too fine a screen, and, of course, typed and written material.

Copies are black on white and can be made on card stock and on both sides of a sheet.

An accessory unit available for use with Verifax copiers can be used to make offset masters from the matrix in about one minute.

Since each copy taken from a matrix reduces the amount of dye on the matrix, each successive copy becomes weaker. The first copy can be made in about 50 seconds; successive copies can be made at a rate of about three a minute.

Letter-size copies cost approximately 9 cents, legal-size copies about 12 cents. Additional copies made from one matrix, however, cost about one-quarter and one-third cent each, respectively.

As with photocopying, overexposure produces dark copies, underexposure light copies. The correct exposure can be gauged easily after a little experience.

Xerography

The xerographic process operates on the familiar principle that unlike electrical charges attract each other, whereas like charges repel each other.

A copying camera is used to throw the image of material to be copied onto a plate which is coated and has been given a positive electrical charge. The action of the light is to cancel this charge. Thus the charge remains only in the areas corresponding to the dark areas of the original, and the image has, in effect, been written on the plate in the form of a positive electrical charge, which is, of course, invisible.

The plate is then placed in a developing tray, where a dark powder of resinous nature is passed over it. This powder has previously been given a negative electrical charge; consequently, it adheres to the charged portions of the plate, and the image becomes at once visible.

A sheet of paper, positively charged, is then placed over the plate, and as a result, a portion of the powder is drawn from the plate to the paper. The sheet is then placed in a "fuser" for a few seconds, where, as a result of heat, the powder is fused permanently into the paper.

It is possible to obtain up to eight copies from the powder remaining on the plate after one exposure and one charge of powder. Among these may be a paper offset master.

The xerographic process can copy typed and handwritten material, drawings, art work, photographs, letterheads, etc. Some cameras permit enlarging and reducing. Copies are completely dry, and of high quality.

The process can be used to prepare paper offset masters; pre-sensitized, positive-working metal offset plates; spirit masters; and translucent copies for processing in diazo equipment.

While most copies are black on white, many different colors and weights of copy paper can be used. Single copies can be made in about three minutes and cost about six cents. Offset masters cost about 12 cents each.

New equipment employing the xerographic process includes "continuous" models in which the entire process continues automatically once the original material has been fed into the machine. High speeds can be attained.

The Duplicating Processes

Gelatin

The gelatin process is a variation on the spirit process. It is sometimes called the hectograph process (the spirit process being similarly called the liquid hectograph process).

Chemically, the two methods are very similar. Both use aniline dyes. Mechanically they differ. In the gelatin process, the master is prepared by typing or drawing with a hectograph carbon face down on the master, instead of face up beneath it. If a carbon is not used, the master may also be prepared by typing or drawing on it with a hectograph ink, crayon, or pencil. In any case, the written material appears as deposits of a dye.

Thus, the master, as prepared, is readily legible, the reading being arranged naturally from left to right.

But copies are not made directly from the master. The master, instead, is placed face down on a flat gelatin surface, and the dye is physically transferred to the gelatin. The image is thereby reversed.

The gelatin may be placed in a flat-bed unit, or wrapped around the rotating drum of a duplicator. Whatever the method, copies are made from the gelatin, not from the master.

To make each copy, a sheet of copy paper is placed face down on the master. A portion of the dye adheres to it, creating the final copy. Each copy removes a thin layer of dye, leaving enough for the next copies. Usually, from 50 to 100 copies can be made. However, if the copies are not run at once, the dye will gradually sink into the gelatin, permitting the gelatin to be used over again, usually within 24 hours. The process may be repeated indefinitely.

As with the spirit method, copies are usually purple on white paper. However, carbons and special ribbons and pencils of various colors may be obtained, and these can be used in any desired combination on one master, permitting great variety. Purple, however, usually gives the longest runs with the strongest copies.

The speed of operation depends on the type of machine and the operator. With flat-bed equipment, about ten copies can be made in a minute. A rotary duplicator may be able to produce as many as 75 copies in a minute. Copies cost a fraction of a cent each.

The quality of copies depends on the clarity and evenness of the original typing or writing. The greater the amount of dye on the master, of course, the more copies can be made from it. The quality of the copy paper is also a factor, better results being obtained, naturally enough, from better paper. The gelatin surface should be slightly moist during the duplicating operation.

The gelatin used in a flat-bed machine is usually in roll form, so that it can be advanced to the next master at the end of a run, without having to wait until the particular master can be re-used. The gelatin is usually cloth-backed for purposes of reinforcement and ease of handling.

Offset

The offset process, as used in the office, is a modification (and simplification) of the familiar printing process known as photo-offset lithography. It is a little complicated to describe, but it turns out work of superior quality.

A master or plate is prepared. This may be of paper, plastic, or metal. Material is written or typed on it, appearing as deposits in the form of greasy lines. The master may be prepared on the typewriter, using an appropriate ribbon, or with any writing instrument which can make lines having the required greasy nature. Offset masters may

also be prepared photographically, or by such other processes as xerography, photocopying, Verifax, diazo, and facsimile.

After preparation, the master or plate is placed around the rotating drum of the duplicator. It passes over two rollers as the drum rotates.

The first of these is moistened with water. Because of the nature of the plate and of the greasy line work on it, the water adheres to the bare parts of the plate but not to the lines. It may be said that the original message has now been written dry on a wet background.

As the drum continues to rotate, the master is brought into contact with the second roller, which is moistened with ink. This ink has a greasy nature and is therefore repelled by the water on the plate, but it adheres to the greasy lines. The message now appears in the form of ink on a wet background.

The drum rotates further, and the plate now passes into contact with a large cylinder covered with a rubber "blanket," and as the blanket comes into contact with the plate, the ink is transferred to the blanket.

This complete cycle — moistening with water, moistening with ink, and printing on the rubber blanket cylinder —occurs each time the drum rotates.

But final copies have not yet been made. The copy paper is fed into the machine, one sheet for each rotation of the drum. As it is pressed against the blanket cylinder the ink is transferred to the paper.

This device of "offsetting" the ink from the master to the paper by means of the blanket cylinder (which gives the process its name) allows the image to be pressed firmly into the copy paper, making it possible to print halftones and other art work on rough paper without losing clarity to any important degree.

Process gives high quality work

The offset process produces work of high quality. Any number of printing colors may be used. The registration of the equipment is usually very exact, so that re-runs for additional colors are possible. The equipment can operate at speeds of 4,500 copies an hour up to estimated maximum speeds of 9,000 an hour. The number of copies which may be made from one master varies with the type of master used — metal plates producing as many as 100,000 in some cases. However, the process is considered economically feasible for runs of as few as ten copies.

Costs are difficult to estimate because they vary widely with the length of the run, but operation is not expensive. Single copies cost approximately five cents, with costs per copy diminishing so that runs of a thousand copies cost about two dollars altogether.

The equipment is admittedly more difficult to operate than most other office duplicating types, and not a little operator skill is required. There have been a number of technical improvements in new machines, however, which have been intended to bring operation of the office offset duplicator within the reach of a relatively unskilled operator.

While masters are easily typed, care should be taken (as with all duplicating equipment) to see that the typing (or writing) is even and consistent. A heavily typed master may not print as well as one typed with a moderate touch, since heavy pressure may cause letters to "spread" or to press the letters beyond reach of the ink roller, so that only their outlines will print. The touch should be firm but light — not enough to cause indentations — and typewriter keys should be clean. It is not necessary that the material typed on the master be easily readable for the master to be capable of turning out first rate copies.

Corrections on the master are easily made by erasing and typing over the error. However, care should be taken to use the proper kind of eraser — one that is not greasy, since it may leave traces that pick up ink from the ink roller. And erasures should not be deep, since damage to the master may cause it to pick up unwanted ink.

Relief

The relief process prints from embossed or raised letters. A familiar example is an ordinary rubber hand stamp. The typewriter itself uses the relief process. The embossed letters may be inked and used to print directly on the copy paper (as in the case of the stamp), or they may print (as in the case of the typewriter) through an inked ribbon.

Most office duplicators using the process, however, consist basically of a rotating drum which has channels into which movable type may be inserted, an ink supply, and a feeding mechanism by which paper can be inserted between the type and a roller. The type itself may be covered by a broad inked ribbon—which is the method used when the equipment is intended to produce copy that resembles typed material—or it may be inked by an ink roller before it comes into contact with the paper. Usually the same machine is capable of either method.

This type of equipment was long known as "multigraph." This term, however, which is owned by the Addressograph-Multigraph Corp., has in recent years been used to describe duplicating equipment made by that company without particular reference to the specific duplicating process used. The company describes this particular process by designating machines which use it as "Multigraph (Relief Process)" machines.

The type is set by hand into the channels of the drum. It may be changed at any time during a run, which gives the process particular versatility for use in preparing price lists and other material in which there are frequent changes. Rubber plates may be used in lieu of, or in addition to, the metal type, as well as slugs, electrotypes, signature plates, etc.

The process can turn out hundreds of thousands of copies if required. It is not an ideal process for very short runs, because of the labor involved in setting the type. However, once the type is set, the cost per copy is extremely low, being a small fraction of a cent. The equipment can turn out from 2,500 to 6,000 copies an hour, in any color, on paper of any color. Registration can be made exact enough to permit re-runs for the purpose of adding additional colors. Quality is high.

Special Liquid

For the last two years, this department's review of duplicating processes has listed the Azograph process (made by the A. B. Dick Co.) and the Chemograph process (made by Ditto, Inc.) as a separate but related pair of processes. The introduction last fall of the Transograph process (by Columbia Ribbon & Carbon Mfg. Co., Inc.) adds another to this group, for while it is not identical to either of the other processes, it is designed to accomplish much the same purpose—the preparation of copies by a method sufficiently like standard spirit duplication to offer the ease and simplicity of that process but at the same time providing a means of overcoming the biggest inherent disadvantage of

the spirit process—its stain hazard.

Azograph and Chemograph use azo dyes and are chemically quite different from the spirit process, which uses aniline dyes. Columbia Ribbon refers to the Transograph process as a "completely new spirit duplicating process," but it was not possible to obtain technical details before press deadline.

The essential secret of all three methods, however, is in preventing the formation of the printing dyes until the master is placed on the duplicator and the copy paper is fed into the machine.

In the case of Azograph and Chemograph, this is accomplished by separating two chemical agents so that they do not react to form a dye until they meet within the machine. The masters used are prepared by typing or drawing, with a special sheet (known as an Azograph transfer sheet or a Chemograph carbon respectively) placed face up underneath. These take the place of the conventional purple carbon used in the spirit process.

Mechanically the method is much like the spirit process. The master is wrapped around the rotating drum of the machine. But, as it is moistened, the chemical agents are exposed to each other, forming a printing dye. This dye then prints onto the paper, producing the final copies.

Transograph uses Transograph Transfer Sets to prepare masters. This process also provides for the creation of printing dyes within the machine. These masters are available in a variety of forms, including continuous forms.

Masters are clean to touch

Thus, all three methods solve the staining problem by not exposing the dyes to the operator's touch.

These processes are essentially intended for the same type of work for which spirit duplication is used. In general, they sacrifice length of run for cleanliness of operation, it being considered that standard runs will not exceed 100 copies by any great margin. The Azograph process prints in blue, Chemograph in a deep blue-black, and Transograph in a deep shade resembling Chemograph.

As with the spirit process, copies become fainter as the run progresses and the quantity of dye on the master decreases. The equipment operates at speeds about comparable to those of the spirit process.

In many cases the same equipment may be used for both the spirit process and one of the new methods. Azograph duplicators, for example, handle the spirit process without alteration; older spirit duplicators, however, do not necessarily handle Azograph. A similar situation exists with respect to Chemograph; Ditto reports that its existing spirit duplicators are easily modified to handle Chemograph. Columbia states that existing spirit equipment is suitable for use with Transograph.

Spirit

The spirit process is sometimes called the liquid process, the fluid process, or the liquid hectograph process. Chemically it is practically identical to the gelatin process described above.

The master used is a sheet of coated paper. In preparing it a sheet of carbon paper is placed face up under it. Pressure from the writing instrument causes a portion of the dye to be transferred from the carbon to the back of the master, creating a reversed image of the material typed.

The master is then placed about the rotating drum of the duplicator. Each time it rotates, a sheet of copy paper enters the machine, slightly moistened as it enters by a solution containing alcohol. The alcohol serves as a solvent for the dye on the master, and as it comes into contact with it, it removes a thin layer of dye and transfers it by physical contact to the copy sheet, making the final copy.

Enough dye is deposited on the master when it is made to permit it to make several hundred copies. A good master may make 300 or 400 copies, and longer runs are sometimes claimed. Copies grow fainter as the run progresses.

Carbons in a number of different colors may be used in preparing the same master. As with the gelatin process, however, purple gives the best results, in terms of strength of copy lines and the number of copies that can be made.

Spirit duplicators are available in both manual and electric versions. Manual models usually can produce from 40 to 60 copies a minute. Electric models may run as fast as 200 copies a minute, but optimum results are usually obtained at speeds from 80 to 120 copies a minute.

Varying the speed of operation can affect the quality of copies. At excessively slow speeds, for example, the solution on the paper may begin to dry before it touches the master, and copies will then be lighter. The darkness of copies can also be varied by changing the pressure of the roller which drives the paper against the master, and by increasing the flow of liquid.

Masters should be prepared with even typing, the keys being clean, or with even pressure when using a hard-pointed writing instrument such as a ball point pen. Erasures are made easily by scraping off faulty material with a dull blade, or with the proper kind of eraser (but excess dye should always be scraped away before attempting to erase). Erasures may also be covered by applying a correction pencil, which covers the unwanted dye. New material may then be typed over the site of the error.

Stencil

The stencil process uses a true stencil for printing purposes. A stencil is a sheet of paper, plastic, metal, or other material, in which letters and numerals have been punched. Actual openings are formed, so that ink brushed on one side of the stencil may pass through to the copy paper on the other side, reproducing the pattern of the openings.

The typical office-type stencil is a wax-covered sheet of fibrous material. This fibrous base holds the centers of letters such as "o" in place even though the surrounding lines have been completely cut through. Actually, the lines are not punched completely through the waxy covering, while the fibrous base allows ink to pass through without interference.

Stencils are cut easily by typewriter or stylus, and may be prepared also by the facsimile and photocopy methods.

After the stencil has been cut, it is wrapped around the rotating drum of the duplicating machine. An ink supply is brushed against the stencil from within the drum, which is perforated, and as the drum rotates, the ink passes through the openings in the stencil to the copy paper, which enters as the drum revolves.

In another type of machine, known as the "twin-cylinder" type, the master is wrapped around two cylinders, which are covered by a silk screen. This type of machine uses ink in paste form, supplied in tubes.

One new development, called "Diagraphy," uses a dye-producing compound in lieu of conventional ink. The dye is not formed until the machine goes into operation. This method eliminates the customary stain hazard.

Manual and electric models are offered. The former can turn out between 40 and 100 copies a minute, on the

average. The latter can operate at speeds of about 180 a minute. Some machines can exceed this rate considerably.

The stencil process can use inks of different colors. Usually only one color is printed at a time. The paper used is normally fairly rough, although with proper care (especially in slipsheeting) bond or offset paper can be used. If some of the newer fast-drying inks are used, copies can be made more easily on the better grades of paper.

Good stencils may be capable of producing several thousand copies if properly made and handled. Using special stencils, much longer runs are possible.

Costs per copy vary with the length of the run. It is estimated that a hundred copies will cost between 35 and 40 cents, while a thousand can be made for about $2.40. To obtain good copies it is essential to use care in cutting the stencil. The typewriter ribbon is not used, and the keys should be clean. Typing (or writing, if manual preparation is used) should be even and firm. When drawing on a stencil, heavy pressure may cause it to tear; broad lines may be obtained with a broad stylus.

Corrections are easily made with the aid of correction fluid, which fills in the lines of unwanted letters.

The sharpest copies are obtained from non-film stencils. Film stencils may be helpful in preventing a typist with a heavy touch from chopping out the centers of letters, and they are useful in preventing the type from becoming clogged with wax removed from the stencil. To make copy heavier — by broadening the lines — the typist may use a cushion sheet.

The Manufacturers

The following list includes the principal makers of office-type copying and duplicating equipment. Such devices as automatic typewriters and high-speed printers are included in more appropriate categories, such as *Typewriters* and *Integrated Data Processing Equipment.* Also see *Microfilm Equipment.*

The codes used in the list are as follows:

D—Diazo equipment.

E — Electrofax equipment. (This equipment is currently in the testing stage.)

F — Facsimile equipment, including models for stencil-cutting.

G—Gelatin equipment.

M—Microfilm equipment usable for making printed copies photographically.

MI—Miscellaneous.

NI — No information available at press time on current products.

O — Offset equipment of the office type.

P—Photocopy equipment.

R—Relief-type equipment.

SL — Special liquid process equipment, including Azograph, Chemograph, and Transograph.

SP—Spirit equipment.

ST—Stencil equipment.

T—Thermo-Fax equipment.

V—Verifax equipment.

X—Xerographic equipment.

Addo-X, Inc., 300 Park Ave., New York. (F; ST)

Addressograph — Multigraph Corp., 1200 Babbitt Rd., Cleveland 17. (O; R)

Air Associates, Inc. SEE: Electronic Communications, Inc.

American Optical Co., Instrument Div., Buffalo 15, N. Y. (M)

American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago 26. (P)

American Tag Co., 6200 S. State St., Chicago 21. (R—NI)

Ampto, Inc., Newton, N. J. (Affiliate of Anken Film & Chemcial Corp.) (P)

Autocopy, Inc., 12150 S. Peoria St., Chicago 43. (G—NI; SP—NI)

Bohn Duplicator Corp., 444 Fourth Ave., New York 16. (SP; ST)

Charles Bruning Co., Inc., 4700 W. Montrose Ave., Chicago 41 (D)

Burroughs Corp., 6071 Second Ave., Detroit 32. (M)

Columbia Ribbon & Carbon Mfg. Co., Inc., 551 Herbhill Rd., Glen Cove, L. I., N. Y. (G; SL—Transograph)

Copease Corp., 425 Park Ave., New York 22. (P)

Copycat Corp., 41 Union Square West, New York 3. (D; P)

Copy-Craft, Inc., 105 Chambers St., New York 7. (P; SP)

Copy-Plus, Inc., 2817 W. Carmen Ave., Milwaukee 9. (SP)

Cormac Photocopy Corp., 80 Fifth Ave., New York 11. (P)

Davidson Corp., 29 Ryerson St., Brooklyn 5, N. Y. (O; R)

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. (O; P; SL—Azograph; SP; ST)

Diebold, Inc., Flofilm Div., P.O. Box 127, Norwalk, Conn. (M)

Ditto, Inc., 6800 McCormick Rd., Chicago 45. (O; SL—Chemograph; SP)

Duophoto Corp., 236 Fifth Ave., New York 1. (P)

Duplicopy Co., 224 W. Illinois St., Chicago 10. (SP)

Du Prints, Inc., 1502 S. Main St., Los Angeles 15. (SP; ST)

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. (V)

Electronic Communications, Inc., Air Associates Div., Teterboro, N. J. (F)

Filmsort, Div., Miehle-Goss-Dexter, Inc., 50 S. Pearl St., Pearl River, N. Y. (M)

Formfoto Mfg. Co., 3715 Milwaukee Ave., Chicago. (P—NI)

General Binding Corp. SEE: Rex-O-Graph Div.

General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J. (P)

Gestetner Duplicator Corp., 216 Lake Ave., Yonkers, N. Y. (P—to make stencils; ST)

Graphic Duplicator Co., 6 Halstead Ave., Harrison, N. Y. (G—NI)

Griscombe Products, Inc., 133 W. 21 St., New York 11. (M)

The Haloid Co., 2-20 Haloid St., Rochester 3, N. Y. (P—Camera type; X)

Hanimex (USA), Inc., 770 Eleventh Ave., New York 10. (M)

Milo Harding Co., 500 S. Monterey Pass Rd., Monterey Park, Calif. (MI—Tracing scopes; ST)

Harris-Seybold Co., Div. of Harris—Intertype Corp., 4510 E. 71 St., Cleveland 5. (O—large)

Hart Mfg. Co., 2400 Endicott St., St. Paul 14. (SP—NI)

Hecto Products, Inc., 110 W. 17 St., New York 11. (G)

The Heyer Corp., 1850 S. Kostner Ave., Chicago 23. (G; SP; ST)

Hunter Photo-Copyist, Inc., 566 Spencer St., Syracuse, N. Y. (P)

Keuffel & Esser Co., 300 Adams, Hoboken, N. J. (D—for microfilm enlargements)

A. Kimball Co., 444 Fourth Ave, New York 16. (R)

L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa. (F)

F. G. Ludwig, Inc., 66 Coulter St.. Old Saybrook, Conn. (P)

Marr Duplicator Co., Inc., 53 Park Place, New York 7. (ST)

Master Addresser Co., 6500 W. Lake St., Minneapolis 16. (SP)

Microlex Corp., 1 Graves St., Rochester 14, N. Y. (M)

Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6. (M; T)

The Multistamp Co., 527 W. 21 St., Norfolk 10 Va. (ST)

Nord Mfg. Corp., 366 Jericho Turnpike, Mineola, L. I., N. Y. (P)

Old Town Corp., 345 Madison Ave., New York. (SP)

Ozalid, Div. of General Aniline & Film Corp., Johnson City, N. Y. (D)

Paragon-Revolute Corp., 77 South Ave., Rochester 4, N. Y. (D)

The C. F. Pease Co., 2601 W. Irving Park Rd., Chicago 18. (D)

Peck & Harvey, 5650 N. Western Ave., Chicago 45. (D)

Peerless Colonial Products, Inc., 200 N. Main St., Ivoryton, Conn. (D)

Peerless Photo Products, Inc., Shoreham, Long Island, N. Y. (P)

Pelprinter, Inc., 555 Central Ave., Orange, N. J. (D)

Pekas Duplicator Co., Lock Box 306, Lesterville, S. D. (ST)

Photorapid of America, Inc., 320 Broadway, New York 7. (D; P)

Photostat Corp., P.O. Box 1970, Rochester, N. Y. (O; P—camera type; V)

Polychrome Corp., 2 Ashburton Ave., Yonkers 2, N. Y. (MI — Adapter to make offset masters from Verifax)

The Print-O-Matic Co., Inc., 724 W. Washington Blvd., Chicago 6. (MI — Diagraphy method using special "inkless" compound with stencils; ST)

Radio Corp. of America, Front & Cooper Sts., Camden, N. J. (E)

Recordak Corp., 415 Madison Ave., New York 22. (M; V)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y. (M; P—including camera types)

Reproduction Products Co., 12790 Westwood Ave., Detroit 23. (D; MI — Reprofax, an electrostatic printing process, under development, with machines expected in mid-year)

Rex-O-Graph Div., General Binding Corp., 7840 W. Hicks St., Milwaukee 14. (SP)

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16. (F; SP; ST)

Robertson Photo-mechanix, Inc., 7440 Lawrence Ave., Chicago 31. (P—camera type)

Rovico, Inc., 318 Market St., Newark 2, N. J. (P)

Rutherford Duplicator Co., P.O. Box 13087, Houston 19. (ST)

Speedliner Co., 4404 Ravenswood Ave., Chicago 40. (SP)

Speed-O-Print Corp., 1801 W. Larchmont Ave., Chicago 13. (ST—NI)

Speed-O-Stat Corp., 236 Fifth Ave., New York 1. (P)

Standard Duplicating Machines Corp., 1935 Parkway, Everett 49, Mass. (SP)

Stenafax Div., Times Facsimile Corp., 540 W. 58 St., New York 19. (F)

Stewart-Warner Electronics, 1300 N. Kostner Ave., Chicago 51. (F)

Tecnifax Corp., Holyoke, Mass. (D)

Times Facsimile Corp. SEE: Stenafax Div.

Vari-Color Duplicator Co., 435 S. Lincoln St., Shawnee, Okla. (SP; ST)

Visirecord, Inc., Copiague, L. I., N. Y. (SP)

Weber Marking Systems, Div. of Weber Addressing Machine Co. Inc., 215 E. Prospect Ave., Mt. Prospect, Ill. (ST)

The Western Union Telegraph Co., 60 Hudson St., New York 13. (F)

Whitin Machine Works, Whitinsville, Mass. (O—marketed by Photostat Corp.)

Wolber Duplicator & Supply Co., 1201 Cortland St., Chicago 14. (SP; ST)

Filing Equipment and Office Safes

FILING EQUIPMENT, in theory at least, is used to provide storage for records of potential value to their owner. If, in practice, the files are full of useless documents, a study of good records management principles is clearly in order. But this is beyond the scope of this department.

The records in storage may be classified according to the frequency with which they are consulted. In general, records that are "active" are kept in equipment which features convenience of access. Records that are called on less frequently are usually kept in less accessible locations.

Filing equipment thus tends to classify itself according to whether storage is to be temporary or permanent, and also according to the type of use to which the records will be put.

But filing equipment is costly, and, moreover, it occupies floor space which in the modern office is itself costly.

Modern filing equipment, therefore, has been designed to reduce costs as far as possible. Aside from the obvious economy of reducing the bulk of material to be filed, there are several ways in which record housing costs can be curtailed.

One of these is to reduce the volume of space actually occupied by the equipment needed to house a given volume of records. This has been done in some instances by redesigning standard filing cabinets to get an extra file drawer into a given cabinet height—chiefly by eliminating unnecessary space between drawers and between the tops of records and the tops of the drawers. It has also been achieved by the use of expanding-front file drawers which allow a tighter packing of material in the drawers, since "fingering space" is eliminated. More compact compressors, also, can be used, as can thin metallic dividers.

Compact filing methods offered

Two record housing methods that are particularly compact are shelf filing and mobile storage installations.

Shelf filing basically consists of arranging file folders on shelving, making the necessary adaptations in the indexing system so that material can be located conveniently. While standard shelving of suitable size can be used, there are on the market a number of models particularly designed for the purpose, being equipped with index card holders, dividers or follower blocks, and (where required) facilities for holding hanging folders.

The basic shelf design has been modified by some manufacturers so that the shelves may be completely housed in closed cabinets. The doors are usually hinged horizontally or otherwise mounted so that when open they are parallel to the floor. Some of these may be used as working surfaces when open. Some types slide back out of the way.

The great advantages of shelf filing are its high compactness and relatively low cost. Far less construction material is used to enclose a given volume of records than is required in a filing cabinet, and shelf units may be placed closer together than can filing cabinets, since it is no longer necessary to leave room in which to open the drawer to maximum depth.

Another space-saver is "mobile storage." The mobile storage principle consists essentially of mounting storage units of any desired type (shelving, transfer cases, supply cabinets, etc.) so that they slide from side to side, riding either on tracks in the floor or suspended from overhead tracks. A row of units may be placed permanently against

a back wall, while tracks are installed immediately in front of it. By mounting one or two fewer units on the tracks than there are units in the back row, space is left to slide cabinets in the front row to the side in order to obtain access to the rear row.

Similarly, a third row can be mounted immediately in front of the second row, so that access to the second row may be had by sliding units of the third row to the side. Theoretically, the number of rows is unlimited, but in practice three or four rows make a workable arrangement. The more rows, of course, the less convenient is the access to rear cabinets. Thus mobile storage, at least for units not in the first row, is best suited to storage of inactive or relatively inactive records.

Another approach to reducing filing costs may actually result in the use of bulkier and more expensive equipment. This may be the case where records are highly active and speed of access is paramount. Thus, so called visible and "visible-vertical" systems have developed, the labor savings being considered to offset added equipment expense.

Essentially, the difference between a visible system and its opposite—a vertical system—lies in whether or not any part of an individual record may be seen and identified when the record in front of it is in place in the files. The term "vertical" has nothing whatever to do with the physical position of the record with respect to the horizontal. It its more properly, though less frequently, referred to as "blind" filing.

Visible records are arranged so that one or more margins of each record will protrude to the side (or top or bottom).

In some cases, the records are carried in pockets, often of transparent plastic or at least provided with a transparent margin. These may be mounted in flat drawers or slides, or in books or in some similar arrangement. Sometimes such records may be mounted in loose leaf binders, pockets not being used. Visible arrangements allow rapid access to records, but may not (depending on the system) allow easy removal of the records.

Quick-access methods save filing time

The vertical-visible method is at heart a form of visible filing, but the term has come into use to mean a type in which records (usually cards) are mounted in banks against large dividers in a type of tub file, with a side margin (and usually a top diagonal margin also) visible. Such an arrangement usually shows a portion of the top margin as well. The principle allows extremely rapid access to filed material, together with easy removal, and is well suited to machine accounting and similar applications. It is, however, fairly bulky and expensive, and it qualifies as a cost-saver in terms of the labor time it saves.

The attempt to reduce labor time has also motivated the design of various types of mechanized files. One popular design makes use of a basically rotary arrangement of card records. Models vary in their particular features. In some, the cards are attached to a ring or other retaining device; in others they are carried about the circumference of a wheel or drum, being kept in place by retaining bands; in still others, they ride in trays which are designed to remain upright regardless of the position of the rotating mechanism.

Many of these files are electrically powered, and special features may allow a seated operator to have a bank of trays or of cards brought to desk level at the touch of a button.

In other arrangements, visible card trays may be mounted in banks that move vertically. Again, at the touch of a button, a selected tray may be brought automatically to working level.

Other types of mechanization include systems in which files (including correspondence) may be mounted on units which rotate around a vertical axis, and certain models in which cards are marginally punched at the bottom in accordance with a code, filed at random in a special drawer, and located by entering the code on a keyboard actuating a mechanism which raises the cards above the level of adjacent cards.

The latter approach makes use of the principle of random filing. Wherever records can be filed in such a way that it is not necessary to hunt specific locations in the files (as by dispensing with a strict alphabetical or numerical sequence), speed of filing is increased. There are certain filing systems available which permit at least a semi-random type of filing designed to speed both the filing and locating of records.

One of the interesting developments of the last few years has been the increase in equipment designed to permit individual workers to perform a variety of jobs relating to a given bookkeeping or accounting function. Thus, machine stations in many cases provide

The house of business is built largely of papers. But there are too many of them, and the debris hampers efficiency. Unlike houses of cards, which fall in a slight breeze, houses of paper are hard to budge with a bulldozer. However, many offices are learning to discard unessential records and to file compactly those that remain. This open-shelf installation at Mutual Benefit Life Insurance Company shows one good way to do it. Shelves have no expensive moving parts and need less aisle space.

not only a place for the machine together with a working area, but also facilities for housing the records at the point of use. New types of equipment have been designed for machine accounting records.

Not a little of this equipment is now offered with protection features against fire. It is argued that most office fires occur during the working day, when records are exposed. It follows that if a maximum number of records can be housed in protected storage, dangers from fire losses can be minimized.

Consequently, the market now offers a range of insulated record equipment designed for installation at the point where the records are used. The list includes posting desks, ledger trays and insulated filing cabinets.

Fire resistance hard to measure

It must be pointed out that the qualities which make for protection against fire are more deceptive than may appear. Placing records in steel cabinets does not constitute protection. On the contrary, ordinary filing cabinets become ovens in times of fire and turn their contents into ashes even though the fire itself never enters. Ordinary paper chars at temperatures of less than 400° F, and building fires often reach temperatures of 1,000° and even 2,000°.

In order to classify storage equipment according to its ability to protect records against heat, the Underwriters' Laboratories, Inc., and similar organizations, such as the Safe Manufacturers National Association, have determined the requirements for various levels of protection and have issued corresponding labels which may be used, under appropriate regulations, by manufacturers whose products meet the requirements.

Usually these labels indicate that a record container will prevent the temperature at a specified point within from exceeding 350° F over a specified period of time. The exact meanings of these labels may be determined by studying the specifications issued by the appropriate organizations. Roughly, the following definitions apply:

What the labels mean

The *Class A Label* indicates resistance to a four-hour fire reaching 2,000°, during which temperatures one inch from walls and door will not exceed 350°. It also signifies resistance to explosion from sudden heating and to dropping 30 feet and being reheated.

The *Class B Label* indicates resistance to a two-hour fire reaching 1850°, again with temperatures one inch from walls or door not exceeding 350°. It also indicates resistance to explosion from sudden heating and to impact after dropping.

The *Class C Label* indicates a similar resistance (in terms of interior temperature) to one-hour fires reaching 1700°, together with resistance to both explosion from sudden heating and impact.

The *Class D Label,* which is not intended to show protective qualities in buildings where collapse may occur as a result of fire, shows resistance to a one-hour fire reaching 1700°, with temperatures not exceeding 350° in the center of the compartment, together with resistance to explosion from sudden heating.

The *Class E Label* indicates similar protection in half-hour fires reaching 1550°.

It is emphasized by the Underwriters' Laboratories that fire resistance "may be seriously impaired by disturbance or injury of the insulation material in a safe due to fire, burglary, or improper application of accessories."

The ability of most filing equipment to resist theft is very limited, and, in any case, bears no direct relation to its fire-resisting qualities. The labels used generally indicate resistance to attacks of various types over specified periods of time.

Labels used on most office equipment, other than the more expensive safes, generally make no promise of protection against attack by explosives or oxy-fuel torches. "Tamper-resistant" doors are expected to provide resistance against tampering for "a limited time." Relocking devices, according to the Underwriters' Laboratories, "are intended to operate and relock the original boltwork or to relock the door by the functioning of auxiliary bolts in the event of a burglarious attack upon the door."

It is, of course, too expensive to provide truly adequate fire and theft protection for all of a company's records. On the other hand, it may be too expensive not to provide it for the vital records — which vary from company to company. An alarmingly high number of those businesses that lose their records in fires are unable to continue in business.

Protection in this sense, of course, raises the question of microfilming, but that subject is discussed elsewhere in this department.

The labels referred to just above apply to safes as well as to other types of record protection equipment. Classes A, B and C labels are available on safes, Classes B and C labels on "insulated record containers," and Classes D and E labels on "insulated filing devices."

The Manufacturers

The following list includes the major manufacturers of various types of filing and record storage equipment. See also the list, which follows it immediately, covering office safes and certain types of "point-of-use" record protection equipment.

The code symbols used in the list are as follows:

FC—Filing cabinets.

MI—Miscellaneous.

MS—Mobile storage installations in which storage units ride on tracks mounted on the floor or suspended from above.

NI — No information available at press time on current products.

RM — Rotary and mechanized files and similar equipment.

SH—Shelf filing equipment, including open- and closed-shelf types.

TC—Transfer cases.

VB — Visible record equipment, binder type.

VC—Visible record equipment, card tray type. (Includes book-type modifications.)

VV—Visible record equipment, "vertical visible" type.

Ace Looseleaf Corp., 27 Bleecker St., New York 12. (VB)

Acme Visible Records, Inc., Crozet, Va. (RM; VB; VC; VV)

The Acorn Co., 4605 W. 21 St., Chicago 50. (FC; MI—Portable deskside)

R. C. Allen Business Machines, Inc., 678 Front Ave., N. W., Grand Rapids 4, Mich. (FC—Insulated)

All-Steel Equipment Inc., 100 Griffith Ave., Aurora, Ill. (FC)

Amberg File & Index Co., 1627 E. Duane Blvd., Kankakee, Ill. (MI—Box, portable, some for suspension folders; TC)

American Box & File Co., 18 Mangum St., S. W., Atlanta. (FC—NI)

American Metal Products Corp., 3864 Laclede Ave., St. Louis 8. (FC—NI)

Art Metal Construction Co., Jones & Gifford Aves., Jamestown, N. Y. (FC; FC—Plans and drawings; SH; TC; VB; VC)

Art Steel Co., Inc., 170 W. 233 St., New York 63. (FC; FC—Blueprint, cut, and art work; RM; VB; VC; VV)

Atlantic Microfilm Corp., 28 Railroad Ave., Pearl River, N. Y. (FC — Microfilm)

Atlas Stencil Files Corp., 16716 Westfield Ave., Cleveland 10. (FC — Stencils, plates)

Automatic File & Index Co., 549 W. Washington Blvd., Chicago 6. (FC; TC; VV)

Bankers Box Co., 2607 N. 25 Ave., Franklin Park, Ill. (TC)

The Bentson Mfg. Co., 652 N. Highland Ave., Aurora, Ill. (FC)

Berger Div., Republic Steel Corp., 1038 Belden Ave., N. E., Canton 5, Ohio (FC; TC)

Borroughs Mfg. Co., 3002 N. Burdick, Kalamazoo, Mich. (SH)

Browne-Morse Co., Muskegon, Mich. (FC; FC—Microfilm)

Business Efficiency Aids, 8114 N. Lawndale Ave., Skokie, Ill. (Visible records using magnetism to separate cards)

Can-Pro Corp., 19 E. McWilliams St., Fond du Lac, Wis. (MI—Shoulder-type portable file cases)

Cel-U-Dex Corp., P. O. Box 1127, New Windsor, Newburgh, N. Y. (MI —Drawer dividers; SH—Divider units; VB)

Challenger Steel Products Corp., 350 Morgan Ave., Brooklyn 6, N. Y. (FC)

Cole Steel Equipment Co., Inc., 415 Madison Ave., New York 17. (FC; FC —Blueprint; MI—Portable; TC)

Columbia Steel Equipment Co., Fort Washington, Pa. (FC; SH)

Convoy, Inc., 3424 Navarre Rd., S. W., Canton 6, Ohio. (TC)

Cooks', Inc., 207 Lakeview Ave., N. E., Blackwood, N. J. (VB)

Corry-Jamestown Mfg. Corp., 44 N. Center St., Corry, Pa. (FC; FC—Microfilm; TC)

Currier Mfg. Co., 2448 W. Larpenteur Ave., St. Paul 8. (FC — custom made; SH; VC; VV)

De Luxe Metal Furniture Co., Div. of Royal Metal Mfg. Co., 243 Struthers Ave., Warren, Pa. (SH; TC)

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. (MI—Stencil files)

Diebold, Inc., 2011 Mulberry Rd., Canton 2, Ohio. (FC — Insulated; RM; SH; TC; VB; VC; VV)

Dolin Metal Products, Inc., 315 Lexington Ave., Brooklyn 16, N. Y. (FC— One-drawer; MS; SH; TC)

Durable Metal Products Co., 38-42 Review Ave., Long Island City 1, N. Y. (FC; MI—roller files, lift top type)

Elbe File & Binder Co., Inc., 649 Alden St., Fall River, Mass. (VB)

Electrofile Div., Johnson Fare Box Co., 4619 N. Ravenswood Ave., Chicago 40. (RM)

Equipto, Div. of Aurora Equipment Co., 422 Cleveland, Aurora, Ill. (SH)

Estey Corp., 350 Broadway, New York 13. (SH)

The Federal Equipment Co., P. O. Box 446, Carlisle, Pa. (MI—Flat-drawer filing cases)

Ferris Business Equipment, Inc., 45 Seymour St., Stratford, Conn. (MI—Tub files for cards; RM)

The General Fireproofing Co., 413 Dennick Ave., Youngstown 1, Ohio. (FC; FC—Microfilm; MI—Card desks; SH; TC; VC)

General Steel Products Corp., Flushing 55, N. Y. (MS; SH; VV)

The Globe-Wernicke Co., Norwood, Cincinnati 12. (FC; RM — Reference stands; SH; TC; VB; VC)

Guide System & Supply Co., Inc., 335 Canal St., New York 13. (MI—Units for hanging folders; TC)

The H-O-N Co., Third & Oak Sts., Muscatine, Iowa. (FC; VC)

Hamilton Mfg. Co., Two Rivers, Wis. (MI—Flat-drawer files)

Harrison Steel Desk & File Co., 4718 W. Fifth Ave., Chicago 44. (FC; TC)

Haskell, Inc., 303 E. Carson St., Pittsburgh 19. (FC—One-drawer)

Hedges Mfg. Co., 2931 Wentworth Ave., Chicago 16. (TC)

Herring-Hall-Marvin Safe Co., 1550 Grand Blvd., Hamilton, Ohio. (FC — Insulated; RM; TC)

Hillside Metal Products Co., 262 Passaic St., Newark 4, N. J. (FC)

The Interior Steel Equipment Co., 2352 E. 69 St., Cleveland 4. (TC)

Invincible Metal Furniture Co., 842 S. 26 St., Manitowoc, Wis. (FC)

Jasin Mfg. Co., U. S. 31 at Michigan Ave., South Haven, Mich. (SH—Shelf cases)

Jayem Sales Corp., 31 Coffey St., Brooklyn 31, N. Y. (MI—Personal)

Johnson Fare Box Co. SEE: Electrofile Div.

Kay-Wood Products, Inc., Drawer 361, Bedford, Pa. (TC)

Lansdale Products Corp., Box 568, Lansdale, Pa. (MI—Portable)

Le Febure Corp., 716 Oakland Rd., N. E., Cedar Rapids, Iowa. (FC—Tab card, check, and microfilm; RM; SH; TC; VB; VC; VV)

Lit-Ning Products Co., 3907 Duquesne Ave., Culver City, Calif. (MI— Hanging folder units; SH)

Logan Business Products, Inc., Vue-Fax Div., Westbury, N. Y. (VV)

Lyon Metal Products, Inc., Aurora, Ill. (FC; FC—Blueprint; SH)

Master Products Mfg. Co., 3480 E. 14 St., Los Angeles 23. (SH; VV)

Master-Craft Corp., Div. of The Shaw-Walker Co., 831 Cobb Ave., Kalamazoo, Mich. (VB)

The Mayfair Co., 315 N. Desplaines St., Chicago 6. (TC)

The McBee Co., Smith St., Athens, Ohio. (MI — Binders for marginally punched forms)

McMillan Book Co., 701 E. Genesee St., Syracuse, N. Y. (VB—NI)

Meilink Steel Safe Co., 1672 Oakwood Ave., Toledo 6, Ohio. (FC — Insulated)

Midwest Metal Mfg. Co., 1818 N. 18 St., St. Louis 6. (FC—NI)

Mim-E-O Stencil Files Co., 886 N. Milwaukee Ave., Chicago 22. (FC — Stencil)

Mobile Racks, Inc.. 369 Lexington Ave., New York 17. (MS)

Momar Industries, 4323 W. 32 St., Chicago 23. (MI—Blueprint racks)

Monarch Metal Products, Inc., New Windsor, N. Y. (FC—Tab card, magnetic tape)

Moore Business Forms, Inc., Niagara Falls, N. Y. (FC—for accounts receivable)

The Mosler Safe Co., Hamilton, Ohio. (RM)

Ray Myers Corp., 204 Washington Ave., Endicott, N. Y. (FC — Tab card; MI — Card desks; storage for control panels)

National Blank Book Co., P. O. Box 791, Holyoke, Mass. (VB; VC; VV)

Norfield Methods & Procedures, Inc., 933 S. Clinton Ave., Oak Park, Ill. (VB)

Northwest Metal Products Co., 1337 E. Mason St., Green Bay, Wis. (FC; MI —portable; TC; VC)

Office Equipment Mfg. Co., Inc., 2208 Summer St., Dallas. (TC)

Oxford Filing Supply Co., Inc., Clinton Rd., Garden City, N.Y. (MI—Hanging folder units; TC)

Parker Steel Products, Inc., 54 N. 11 St., Brooklyn 11, N. Y. (TC)

Peerless Steel Equipment Co., 6600 Hasbrook Ave., Philadelphia 11. (FC)

Penn Metal Corp. of Pa., 50 Oregon Ave., Philadelphia. (FC—NI)

Posting Equipment Corp., 1721 Elmwood Ave., Buffalo 7. (TC)

Pronto File Corp., 415 Madison Ave., New York 17. (TC)

Ramsey Co., 106 S. Seventh St., Philadelphia 6. (MS; SH)

Record Files, Inc., P. O. Box 581, Wooster, Ohio (MI — Mobile tab card units; SH; TC)

Recordak Corp., 415 Madison Ave., New York 17. (FC—Microfilm)

The Recordplate Co., 130 N. Fair Oaks Ave., Pasadena 1, Calif. (VB)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. (FC; RM; SH; TC; VB; VC; VV)

Republic Steel Corp. SEE: Berger Div.

Royal Metal Mfg. Co., 1 Park Ave., New York 16. (SH)

The Schwab Safe Co., Lafayette, Ind. (FC — Insulated; MI — Insulated ledger chest with hanging folders)

Security Steel Equipment Corp., Avenel, N. J. (FC; FC—Microfilm and tab card)

Sedgwick Equipment Corp., 80 Eighth Ave., New York 11. (MS—NI; SH—NI)

The Shaw-Walker Co., Muskegon, Mich. (FC; FC—Insulated; TC; VB; VC; VV)

The C. E. Sheppard Co., 44-01 21 St., Long Island City 1, N. Y. (VB)

Stacor Equipment Co., 768 E. New York Ave., Brooklyn 3, N. Y. (FC — Blueprints, Maps, X-ray)

Standard Pressed Steel Co., Box 501, Jenkintown, Pa. (SH)

Stationers Loose Leaf Co., 246 E. Chicago St., Milwaukee 1. (VB)

Steelcase, Inc., 1491 Division Ave., S., Grand Rapids 2, Mich. (FC; SH)

Steel Furniture Mfg. Co., 15531 Arrow Highway, Baldwin Park, Calif. (FC)

Steel-Parts Mfg. Co., 4630 W. Harrison St., Chicago 44. (MI—Portable units for hanging folders)

Strayer Coin Bag Co., Inc., New Brighton, Pa. (TC)

Supreme Steel Equipment Corp., 53 St. and First Ave., Brooklyn 32, N. Y. (SH)

Systems Sales Co., P. O. Box 343, Binghamton, N. Y. (FC—Tab cards; TC —Tab cards)

Tab Products Co., 995 Market St., San Francisco 3. (MI — Tub files for cards; SH; VC)

Todd-Hadley Div., Burroughs Corp., 6071 Second Ave., Detroit 32. (VB; VV)

Top Flight Products Co., Inc., 6224 S. Oakley Ave., Chicago 36. (MI — Hanging file units; TC)

The Victor Safe & Equipment Co., Inc., 315 Fourth Ave., New York 10. (FC; FC—Insulated; MI—Portable book visible; VC; VV)

Virginia Metal Products, Inc., Orange, Va. (SH)

Visirecord, Inc., Copiague, L. I., N.Y. (VV—Including portable units)

Visi-Shelf File, Inc., 225 Broadway, New York 7. (SH)

Wassell Organization, Inc., Sylvan Ave., Westport, Conn. (RM; VC; VV)

Watson Mfg. Co., Inc., 63 Taylor St., Jamestown, N. Y. (FC; RM; SH; VC)

Watt & Gillogly, Inc., 7 S. Dearborn St., Chicago 3. (MI—Binders for bookkeeping and accounting forms)

The Weis Mfg. Co., Box 600, Monroe, Mich. (TC—NI)

Western Mfg. Co., 532 N. Highland Ave., Aurora, Ill. (FC)

Wheeldex & Simpla Products, Inc., 40 Bank St., White Plains, N. Y. (RM)

Wilson Jones Co., 209 S. Jefferson St., Chicago 6. (TC; VB)

The Wright Line, Inc., 160 Gold Star Blvd., Worcester 6, Mass. (FC — Tab card)

Yawman & Erbe Mfg. Co., 1099 Jay St., Rochester 3, N. Y. (FC; FC—Microfilm; SH; TC; VC)

York Safe & Lock, Mulberry Rd., Canton 2, Ohio. (SH; TC)

Zephyr American Corp., 95 Morton St., New York 14. (RM)

Office Safes and Insulated Record Protection Equipment

The following list covers the major manufacturers of safes and record protection equipment. The types of equipmen offered by each company are indicated by the following codes:

FC—Insulated filing cabinets—information on labels not available at press time.

FCC—Insulated filing cabinets with Class C labels.

FCD—Insulated filing cabinets with Class D labels.

MI—Miscellaneous.

NI — No information available at press time on current products.

PU—"Point of use" record protection equipment, including ledger safes, insulated posting desks, and similar equipment, usually carrying either a Class C or D label.

S—Safes—information on labels not available at press time.

SA—Safes with Class A labels.

SB—Safes with Class B labels.

SC—Safes with Class C labels.

SD—Safes with Class D labels.

Acorn Products Co., 4605 W. 21 St., Chicago 50. (MI — Insulated boxes, security vaults and chests)

R. C. Allen Business Machines, Inc., 678 Front Ave., N.W., Grand Rapids 4, Mich. (FCC; FCD; SA; SB; SC)

Art Steel Co., Inc., 170 W. 233 St., New York 63. (SC)

John D. Brush & Co., Inc., 545 West Ave., Rochester 11, N. Y. (SC; SD)

Cole Steel Equipment Co., Inc., 415 Madison Ave., New York 17. (S)

Condon Safe Co., 185 Norwood Ave., Buffalo, N. Y. (NI)

Diebold, Inc., 2011 Mulberry Rd., Canton 2, Ohio (FCC; FCD; PU; SA; SB; SC)

Dolin Metal Products, 315 Lexington Ave., Brooklyn 16, N. Y. (FC)

Gary Safe Co., 1020 Crocker St., Los Angeles 21. (S—Floor safes and money chests for burglary protection)

The General Fireproofing Co., 413 Dennick Ave., Youngstown, Ohio. (FCC; FCD)

The Globe-Wernicke Co., Norwood, Cincinnati 12, Ohio. (FCC; FCD)

Herring-Hall-Marvin Safe Co., 1550 Grand Blvd., Hamilton, Ohio. (FCC; FCD; PU; SA; SB; SC)

In-A-Floor Safe Co., 1416 S. Los Angeles St., Los Angeles 15. (S—Safes for embedding in floors)

Kwikset Sales & Service Co., Anaheim, Calif. (S—Small wall safes)

Le Febure Corp., 716 Oakland Rd., N.E., Cedar Rapids, Iowa. (FCD; PU)

Meilink Steel Safe Co., 1672 Oakwood Ave., Toledo 6, Ohio. (FCC; FCD; PU; SA; SB; SC)

Midwestern Mfg. Corp., 419 Lemcke Bldg., Indianapolis 4. (FCC; PU; SA; SB; SC)

Migh-T-Safe Mfg. Co., 5829 W. Adams Blvd., Culver City, Calif. (S—Money chests and safes)

The Mosler Safe Co., Hamilton, Ohio. (SA; SB; SC)

Protectall Safe Corp., Hamilton, Ohio. (S—Money safes; SC)

Remington Rand, Div., of Sperry Rand Corp., 315 Fourth Ave., New

York 10. (FCC; FCD; PU; SA; SB; SC)

The Schwab Safe Co., Lafayette, Ind. (SA; SB; SC)

The Shaw-Walker Co., Muskegon, Mich. (FCC; FCD; PU; SC)

The Victor Safe & Equipment Co., Inc., 315 Fourth Ave., New York 10. (FCC; FCD; PU; SA; SB; SC)

Visirecord, Inc., Copiague, L. I., N. Y. (FCC; PU)

York Safe & Lock, Canton 2, Ohio. (FCC; FCD; PU; SA; SB; SC)

Integrated Data Processing Equipment

SOMETIMES an idea is so simple that it is exceedingly hard to understand. A really brilliant new idea often seems at first to be either trivial or absurd. Man is slow to believe that a complicated problem can ever have a simple cure. So, when a good new idea appears, the best way to keep it from being ignored is to make it appear immensely involved. This is what has happened to the concept known as "integrated data processing."

Basically, the integrated data processing principle is "Don't do any more work than you have to." Or, to put it another way, "Never repeat yourself."

Does this seem like an oversimplification? Well, consider. In any business transaction certain information has to be repeated a number of times. If an order comes in, it sets in motion a sequence of events. The name and address of the customer have to be recorded in some way. The information may be written or typed—or spoken or telephoned to someone else who will write or type it. The nature of the order must similarly be recorded.

But this is certainly not the last time this information will be used. It will appear on all kinds of documents—it may end up on such diverse records as instructions to the factory, requisitions from stock, shipping instructions, accounting records, sales reports, invoices, mailing lists.

Each time each item appears on a record, it has to be put there, obviously. After the first entry, each repetition is, of course, a duplication of effort. It would be much simpler if when the item was written down the first time it stayed written down for all future users.

In essence, this is the whole idea behind integrated data processing. The principle is simply that data recorded once should not have to be recorded again by human hand.

A great deal of office work consists of recording information that has previously been written down in some other place. If these repetitions can be eliminated, obviously a great deal of effort can be saved.

There are two obvious ways of avoiding these repetitions. One is to find some way to record the original data in all the places it will be needed at the same time it is first recorded. The other is to work out a system in which the data will repeat itself automatically.

The first approach has a number of obvious applications. The simplest of these is the use of carbon paper. This may not be the first thing one thinks of when IDP is mentioned, but it is a perfect example of the basic principle. The use of carbon paper eliminates the need to enter the same information a second or third time. The original typing or writing is sufficient.

This idea, of course, has been refined. Every small office is familiar with "one-writing" systems for handling payroll or accounts receivable. In such systems, several forms pertaining to the same transaction are aligned one above the other. The forms are so designed that when they are properly aligned, data written on the top one will be transferred, selectively, to the forms below. This is done by arranging to have carbon paper (or carbon "spots" on the backs of the forms) located so as to transfer the desired information. Carbon is not used underneath the information which is not to be transferred, or if it is, the form on which the data should not appear is printed with a design which makes it illegible.

The design of the forms is an essential part of such a system. It accomplishes its purpose very simply. It was not called IDP, of course, when "one-writing" systems first were designed. But the idea is the same.

The same principle is used in duplicating machines. Further, if the equipment is of the "systems" type—in which certain portions of the material can be selected to suit the forms being used—IDP methods can be used without great involvement in machines or people.

These methods were familiar long before anyone heard the phrase "integrated data processing." Perhaps this is half the reason why it is difficult to accept the fact that these are actual instances of the IDP approach. The second approach—to provide a means by which information can repeat itself automatically—is newer. It is true that in practice it often becomes complicated. This is the other half of the reason why IDP is so often thought to be monstrously involved. Yet the principle is really just as simple as the principle used in making extra copies with carbon paper.

Of course, it is much easier to make extra copies at the time the first copy is made than it is to put that copy into a form which will repeat itself automatically. (One exception is the case of preparing the original in the form of a duplicating master or stencil.)

The process of getting material to repeat itself automatically, of course, requires a machine. It must be a machine, moreover, that can "read" instructions. And, if the process is to be effective on the widest scale, there must be, at some place along the line, other machines that transmit the data from machine to machine.

What is needed, then, is a "machine language"—some medium in which instructions can be given to the machine so that it can operate without human guidance.

IDP started with existing systems

It was natural to start with a language already in existence. For years, paper tape punched with codes corresponding to letters and numerals has been used to actuate wire transmission equipment. This is the principle used in teletypewriter systems.

When a punched tape is used, the typist simply types in the conventional manner, but the machine punches the tape as a by-product of the typing. The tape can then be fed into a reading unit which senses the coded information and "translates" it into the electrical signals used to transmit the message by wire.

At the receiving end, the signals are interpreted as the letters and numerals they represent. Depending on the machine, the codes are again "translated," into printed symbols (thus reproducing the original message) or into codes punched into another tape. Some machines can perform both functions.

The possibility for controlling other kinds of equipment by the use of punched tape became apparent. Initially, tape reading mechanisms were fitted to standard machines—typewriters, adding machines, and so on. Thus, data carried in a tape could be typed

automatically or entered automatically into an adding machine, either for calculation or simply for printing out.

The next logical step was to complete the chain by adapting standard office machines to punch a tape as a by-product of their normal use. The first machines to be so adapted were typewriters, adding machines, bookkeeping machines, and other standard items of office equipment. Thus, machines were enabled to give instructions to each other.

A complete network of communications between machines can thus be set up. Of course, in this form, it does not accomplish anything worth while. There must be some means of selecting from the data in any one document those portions that must be repeated. Thus it has been necessary to introduce, into the tape itself, some instructions as to what parts of the coded material should be reproduced and what parts should be skipped.

Other instructions are used to cause a machine to stop so that additional data can be entered when necessary from other sources. In this respect, a tape-controlled machine operates like an automatic typewriter. It is started initially by feeding the controlling medium—in this case, the tape—into it and pressing the appropriate button. It proceeds automatically, but it stops whenever it encounters a code in the tape that tells it to. It does not continue until it receives further instructions. In the case of the typewriter, such instructions may consist simply in starting the machine again. But the stop is made, of course, so that new information can be typed manually. Once the new material has been introduced, the typist starts the machine, and it then continues on its automatic way.

Avoid repetition—the IDP principle

Here then, in amplified form, is the basic IDP principle: Wherever possible, enter repetitive data into a machine language which can cause other machines to repeat it automatically. Provide instructions for the machine so that it proceeds automatically as long as it is repeating or acting on previous data, but so that it stops whenever new information or changes are to be entered. If necessary, such changes or new data may be entered manually, but if they, too, are repetitions of previous entries, they should also be in a machine language that permits them to be entered automatically. Arrange for this new material to be fed into the machine automatically if possible. Make provisions that as each machine takes its part in the IDP cycle, it in turn creates a machine language record of its operations, together with the instructions necessary to operate the next machine in the cycle without further human intervention. If possible, feed the output of one machine directly into the next machine, or into the intervening transmission equipment, without human action.

Theoretically, then, if the system is completely integrated, human activity is required only to enter new data and to start the operation of the cycle. In practice, it has not yet been possible to make all steps in a system completely automatic. In most cases the limitation is not one of machines but of cost. Theoretically, complete "automation" (for the control of machines by machines is what the word really means) can be had in almost any office operation. But compromises must be made with the costs. The degree of automation which is feasible tends to increase with the size of the operation. Only in very large companies can it be achieved on a really large scale without excessive effort.

Actually, of course, a major proportion of the costs concerns the efforts made to set up the system. Integrated systems do not design themselves. To make them work, it is necessary to coordinate the activities of different departments so that each is making its data entries into the system (and using the data provided it by the system) in a form which permits the greatest degree of automatic operation.

Such an approach means a redesign of the work flow, of the forms used, of the equipment employed. It cuts across departmental boundaries and must therefore be supervised and authorized at an executive level. It means an immense amount of study before the system is installed. The resulting system may save a great deal of work and money once installed, but the cost of preparing for it may be excessive. This is a factor that led to several near disasters in the first days of IDP, for its significance was often underestimated.

The installation of IDP therefore calls for planning of the highest order. In the beginning, this planning had to be carried out without any important experience to serve as a guide. First attempts were necessarily experimental, and, like many experiments, some were failures. Many cost far more than similar efforts would today. But out of these efforts has come a substantial body of information on what IDP can and cannot do. While some who have been hurt have rebelled against it, it seems clear that if the proper planning is done, the proper system developed, and the proper machines employed, IDP offers very definite advantages.

Savings on conventional office work have in some cases been anything but sensational. In part this is a result of the inevitable fact that when a principle is being explored mistakes will be made. And mistakes with electronic equipment can be costly. In part this is also a result of the fact that much of the equipment ordered was either custom made or was built before designs could be standardized for mass production; it was more costly than it will be. And in part it was a result of rushing with fancy equipment into situations in which the potentials for savings were not very great to begin with.

Method is well established

Nevertheless, the basic principle is well established and sound. Call it "automatic perpetuation of repetitive information," or say simply, "Never repeat yourself unnecessarily." No matter how expressed, it is essentially simple in concept.

The first important IDP installations used punched paper tape as the "common language" interconnecting office machines. For a while after IDP first became news it seemed that IDP necessarily involved punched tape. It does not. Any medium which can convey information automatically from machine to machine can serve as the basis for integrated data processing.

In fact, the office world has long been using just such a common language, even though it was not called that. That language, of course, is the punched card. Within the limits of the machine installation, the punched card has served for years to actuate various kinds of calculating, sorting, and tabulating equipment. Except for the motions involved in setting up the control panels or in moving cards from one machine to another, this is a fully automatic system. This is, in fact, integrated data processing.

Once the principle is clear, the way is open to develop other kinds of machine language. Magnetic tape has been used extensively for the purpose. Its great advantages include enormous operating speed, great compactness, and

(Picture by courtesy of Stromberg-Carlson)

Much simpler in concept than it sounds, integrated data processing makes a point of cutting out useless duplication of effort. It can use manual methods, though often it involves machines that take directions from each other, handling routine phases of the work flow automatically. Punched card systems use the IDP principle to speed high-volume operations.

unlimited capacity for re-use. But it is expensive, and in some ways it is hard to handle, so it is used primarily as an internal or "native" language within electronic computer systems.

The magnetic principle, however, can be used in other physical forms. Some equipment uses magnetic codes on the reverse of otherwise quite conventional documents. Such documents can be read by human eye, yet they can be used as automatic data inputs into office machines.

Some units read the printed language

The printed language can also sometimes be used for automatic input. This is difficult to do, but, within limits, it is feasible. Printed figures are "scanned" photoelectrically and, by a process of comparison, are identified. Once identified, they can be used to print, to enter data directly into processing equipment, or to punch cards or tape for further processing. To be successful, the type used must meet certain standards as to size and shape, and must be located accurately on the document. Equipment of this sort can operate at speeds which completely outclass manual inputs but which are still far slower than methods using magnetic sensing.

A combination of this type of character recognition with magnetic sensing (the letters and numerals being printed in a magnetic ink) is under exploration. This seems to have considerable promise in some areas, particularly banking.

The ability of machines to sense, photoelectrically, light and dark areas, has led to exploration with several other types of common languages. One of these is a simple four-bit code consisting of light and dark squares, printed on paper tape. This system, if it can be developed sufficiently, offers the advantage of providing a relatively inexpensive means of obtaining machine language outputs from existing business machines. The tape is printed mechanically, the inputs being derived through a simple mechanical linkage with the working parts of the machine.

One recent development uses a form of the "mark-sensing" principle, in which a machine responds to penciled marks on a card or paper. (This method is familiar from such uses as the grading of examination papers.) In a current development of the principle, input cards are marked by hand. The clerk uses his pencil to connect points printed on the card; he merely selects the information to be recorded. These cards serve primarily as machine input, but they can also accept limited output. One way in which this is done is to "edge-punch" the card in accordance with a code printed on it. This can be done automatically by the machine in answer to a problem entered into it.

Still another new idea is the use of a machine to read perforated numerals of the sort that may be punched into a document by a conventional perforating machine. This method seems to have considerable promise, for perforating equipment is a standard item, the perforations can be read by eye or by machine, and the reading machine is relatively simple in design.

The possibilities, of course, are enormous. It may be assumed that new machine languages will be appearing from time to time, and that current ones will be progressively refined.

Similarly, new uses for machine languages will develop. And there will be advances which make existing machines more compact, less expensive, more flexible, and faster.

Machines are smaller, more flexible

Typical signs of progress in the last year have included the following:

The development of a number of small ($5,000 to $35,000) electronic systems. Some of these are for special purposes, such as billing. These add to the repertory on which the systems man may draw.

The succesful new application of familiar principles to IDP uses. One example: a new high speed printer (nearly 5,000 lines a minute) using the xerographic process to capture the data output of electronic systems.

The increased evidence of flexibility in machines. Systems being refined include some built on a "modular" basis. Basic components may be assembled as required (not a new idea, of course), and may be installed remotely from the central data processing unit. Such an arrangement increases the degree of "integration" possible with one instal-

lation; it has considerable flexibility, and presumably should make it possible to obtain IDP advantages at reduced prices.

But in a sense, the significant accomplishments of the last year have been in developing an increasing body of practical experience with IDP. This has been possible for the simple reason that more and more companies have made installations.

It is not feasible to try to describe in this section all of the IDP equipment on the market. In the following pages an attempt has been made to list manufacturers of equipment which reads, processes, transmits, or otherwise handles data in some machine language form. It includes equipment used simply to enter data into a common language, equipment used to convert it from one language into another, processing equipment, transmitting equipment, and equipment used to "read out" the results into a usable, non-machine, form. In addition, some note is given to accessory equipment, which is of growing importance as a means of facilitating the actual operation of an IDP system.

It will be seen that IDP can be very simple, very complex, or somewhere in between. The complexities, when they do arise, consist in the amount of study that is necessary in order to simplify the work flow, and in the size and flexibility of the equipment used. Nevertheless, even in an mammoth installation, the equipment itself is still relatively simple as compared to the operation it is capable of performing.

There is no evidence at this point that IDP will cut into the office's demands for workers. The office is having a hard enough time trying to find workers as it is. IDP merely makes it possible to do the necessary job with the number of workers available. In fact, one of the present difficulties with automation is that it is being held back by a shortage of workers able to use it.

In any case, a number of experts who reported to this magazine on this subject seem to feel (with a few exceptions) that there are no immediate prospects for a shorter clerical work week or for a reduction in the number of clerical workers. Neither is there any likelihood that the more familiar kinds of machines will be put out of jobs, nor that manual methods will lose a place in the office.

Expensive equipment is only for offices that have a large volume of work. Integrated data processing can be had in the smaller office with the use of simple machine methods — and even with a share of manual methods. The work load of the office is forever increasing. IDP, whatever savings it might have made possible ten years ago, is becoming merely a necessary tool for keeping up with the existing load. Its possibilities for research, study, and solution of management problems, are, of course, immense. But for the time being IDP has enough to do merely to get started in catching up with the volume of paperwork that flows through today's offices.

The Manufacturers

Because of its great diversity, IDP equipment cannot be satisfactorily categorized in the manner used in manufacturers' lists elsewhere in this department. An attempt is made below to describe briefly the general types of products offered by various companies. It should give the reader a reasonably good idea of the types of equipment now available for IDP.

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 7. Automatic graphotypes preparing address plates from punched tape inputs. Reproducing punches for punched cards with addressing facilities. Electronic printers using punched cards to prepare address labels by the facsimile process. Offset duplication equipment capable of IDP systems work through self-reproducing offset masters. Electronic data processing systems developed by Eastman Kodak Co.

Airborne Instruments Laboratory, Inc., Modac Div., 160 Old Country Rd., Mineola, N. Y. Modac electronic data processing systems, including computers, card-to-tape converts, etc., in the $100,000 price range, custom built.

Alwac Corp., 13040 S. Cerise Ave., Hawthorne, Calif. Alwac electronic digital data processing systems of moderately small (about $100,000) to large size. Card converters, high speed paper tape input-output units, and other related equipment.

American Telephone & Telegraph Co., 32 Avenue of the Americas, New York. Complete communications facilities on a nationwide basis, available for transmission of IDP data, including teletypewriter equipment and facilities for switching and distributing wire messages.

Ampex Corp., Instrumentation Div., 934 Charter St., Redwood City, Calif. Transport and recording equipment for magnetic tape with up to 16 tracks for digital information, for use with small business computers, for computer input-storage-output, and for storing addresses in automatic mailing systems.

Anelex Corp., 150 Causeway St., Boston 14. High-speed printers taking inputs from magnetic tape, magnetic drums, punched tape, or punched cards. Magnetic tape recording and transport equipment.

Bell Telephone Laboratories, 463 West St., New York. Research and development work for American Telephone & Telegraph Co.

Bendix Computer Div., Bendix Aviation Corp., 5630 Arbor Vitae St., Los Angeles 45. Small electronic general purpose computers in the $50,000 class, magnetic tape units, and other computer accessories.

Burroughs Corp., 6071 Second Ave., Detroit 32. E-101 desk-size general-purpose electronic computer, priced about $35,000, usable as a complete unit or with tape input and output. Accounting machines equipped to punch paper tape and/or print records as a by-product of normal operations or as inputs to IDP systems. Series G high-speed printers, printing from punched cards and capable also of punching cards and accumulating totals. Bank bookkeeping equipment using magnetic or fluorescent codes printed on reverse of standard business forms. Automatic ticket issuing equipment for transportation companies. Character recognition equipment for punching cards after "reading" printed information. Datafile multiple magnetic tape data storage units. Cardatron input-output punched card systems. *(See also: ElectroData Div.)*

Clary Corp., 408 Junipero St., San Gabriel, Calif. Standard electric adding machines and cash registers equipped to punch paper tape. Tape punching units. Electrical output machines, such as cash registers and adding machines, for use as output from computers and other equipment; also usable for input. Numerical data printers, time data printers, printing timers, and other units. New ECS (Electronic Computation System) is desk-size system priced about $15,000.

Commercial Controls Corp., (Subsidiary of Friden, Inc.), 1 Leighton Ave., Rochester 2, N. Y. Flexowriter electric typewriters capable of reading and/or punching codes in paper tape and cards with similar codes punched near edge.

Motorized Tape Readers provide supplementary control for Flexowriters. Motorized Tape Punches for output from Flexowriters. Conversion equipment between codes of five and more channels. *(SEE ALSO: Friden, Inc.)*

Comptometer Corp., 1735 N. Paulina St., Chicago 22. Comptotape equipment consists of a modified Comptometer Calculator and a programmed punching unit for punching results of calculation into paper tape for further processing. Codes of 5 or 8 channels may be used.

Copy-Craft, Inc., 105 Chambers St., New York 7. Ormig Selective Data Printers are systems-type spirit duplicators adapted for data selection and repetition in integrated systems.

Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago 40. New Perf-O-Reader reads perforated numbers and converts them into various machine languages and into readout via tape-actuated adding machines, typewriters, etc.

Dage Television Div., Thompson Products, Inc., Michigan City, Ind. Closed circuit television equipment and modified TV equipment operating on low frequencies to permit data transmission visually with the less expensive types of transmission channels and equipment.

Dashew Business Machines, Inc., 5996 Smiley Drive, Culver City, Calif. Equipment for embossing metal plates automatically from punched tape, punched cards, magnetic tape and automatic tag embossers. Plates can be used to print data on records.

Datamatic Corp., 151 Needham St., Newton Highlands 61, Mass. Large-scale electronic data processing systems in the million-dollar-and-up category, together with such accessory equipment as magnetic file units, input and output converters, file switching and reference units, and auxiliary processing equipment.

Dennison Mfg. Co., Machine Systems Div., 300 Howard St., Framingham, Mass. Print-Punch Marking Machines pre-punch merchandise tags for attachment to merchandise; tags with from 2 to 6 stubs, or tags in continuous strips, may be prepared, depending on equipment. Tags can be converted to standard punched cards at time of sale.

Ditto, Inc., 6800 McCormick Rd., Chicago 45. Systems-type spirit duplicators for data selection and repetition in integrated systems.

Allen B. DuMont Laboratories, Inc., 750 Bloomfield Ave., Clifton, N. J. Closed circuit television equipment usable in data handling systems.

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. Special-purpose electronic data processing systems for mailing operations, using punched card inputs. Kodak Listomatic Camera equipment for high speed compilation of directory and similar information.

ElectroData Div., Burroughs Corp., 460 Sierra Madre Villa, Pasadena 6, Calif. Datatron general-purpose electronic computers of small-to-medium size, with necessary accessory equipment. Datafile multiple magnetic tape data storage units and Charactron input-output punched card systems. The company has also done work on systems using magnetic codes on the reverse of business forms.

Electronic Associates, Inc., Long Branch, N. J. Automatic plotting equipment using digital inputs from punched cards or tape to prepare statistical graphs and sketches.

Electronics Corp. of America, 10 Potter St., Cambridge 42, Mass. Electronic Magnefile equipment used for maintaining perpetual inventory information, with inputs and outputs from and to punched tape or punched cards; some computing facilities included.

Farrington Mfg. Co., Needham, Mass. Special systems such as Scandex for reading printed numbers photo-electrically and punching cards, and Charga-Plate credit identification systems for department stores.

Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20. High speed punched paper tape readers for use in IDP systems, as in providing entry of data into electronic computers. Mercury and Pegasus general-purpose electronic computer systems, priced at about $350,000 and $150,000 respectively. New Business Transactor reads cards which have been marked manually (like "mark-sensed" cards) and enters data into computers; the unit can also provide limited output from the computer, using marginal punching. Also magnetic drum storage units and paper-to-magnetic tape converters.

Fischer & Porter Co., Hatboro, Pa. Equipment to convert electric office typewriters into output units from automatic systems. Optional units may be used to punch paper tape.

Wm. A. Force & Co., Inc., 220 Nichols Ave., Brooklyn 8, N. Y. Numbering machine printing codes usable in IDP systems.

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. Adding machines and other equipment modified to punch paper tape. Computyper is an automatic billing machine consisting of a Flexowriter (electric typewriter) and calculator; it can read and punch paper tape. Compu-Punch calculates and punches cards or tape automatically. Selectadata equipment selects and sorts data in punched tape for use by adding machines and typewriters. Teledata equipment transmits codes of 5, 6, 7, or 8 channels. *(SEE ALSO: Commercial Controls Corp., a subsidiary.)*

General Electric Co., Schenectady, N. Y. Specialized data processing equipment reported to be under development. Components for the National Cash Register 304 computer.

The Haloid Co., 2-20 Haloid St., Rochester 3, N. Y. Continuous printers using microfilm or opaque material; work being done in area of continuous dry printing as output from high-speed data processing equipment through cathode tube projection. In collaboration with Stromberg-Carlson, Haloid has developed a high-speed printer operating at speeds approaching 5,000 lines a minute. *(SEE: Stromberg-Carlson.)*

Intelligent Machines Research Corp., Research Park, 7019 Edsall Rd., Alexandria, Va. Character recognition devices (IMR Analyzing Readers) to convert mechanically printed impressions (as from a typewriter or adding machine) into punched cards, paper tape, magnetic tape, etc., or to use the information for sorting or other purposes. IMR Selfchek type is designed for use on adding machines and other equipment to prepare material to be machine-sensed. The IMR Balancing Attachment intercouples a Friden adding machine and an IBM card punch.

International Business Machines Corp., 590 Madison Ave., New York 22. Extensive line of punched card equipment of all types, and of electronic data processing equipment. Computers of 700 series are of million-dollar-and-up class. Type 650 is a medium-priced computing system. RAMAC units are designed to provide random access to magnetically stored information. APR equipment records production data from the factory automatically to coordinate flow of information from plant to office. Other equipment includes Cardatape one-man account-

ing stations, transceivers to send and receive punched card information by wire or radio, conversion equipment such as tape-to-card punches, transistorized calculators, converters for reading pre-punched merchandise tags, card-punching time clocks, desk-size electronic computer, and desk-size Electronic Typing Calculator (designed for billing).

International Standard Trading Corp., 22 Thames St., New York 6. (An affiliate of International Telephone & Telegraph Corp.) Perforating typewriters, tape transmitters and reperforators, special-purpose data processing equipment, and a variety of teletypewriter and other communications equipment.

International Telephone & Telegraph Corp., 67 Broad St., New York. (SEE: International Standard Trading Corp.)

A. Kimball Co., 444 Fourth Ave., New York 16. Machines for pre-punching merchandise tags for attachment to merchandise for use in subsequent automatic reprocessing.

Kleinschmidt, Inc., County Line Rd., Deerfield, Ill. Line of teletypewriter and other intercommunications equipment usable in IDP systems.

Laboratory for Electronics, Inc., 75 Pitts St., Boston 14. Diana large-scale general-purpose electronic data processing systems with accessory equipment. TIM is smaller (about $75,000) general-purpose system.

Librascope, Inc., 1607 Flower St., Glendale 1, Calif. Manufactures small electronic digital computers for Royal Precision Corp. *(SEE: Royal McBee Corp., which is the parent company.)*

Litton Industries, 336 N. Foothill Rd., Beverly Hills, Calif. Information on current activities not available at press time. Company has made small electronic calculators and other equipment.

Logistics Research, Inc. (SEE: Alwac Corp.)

Marchant Calculators, Inc., 1475 Powell St., Oakland 8, Calif. Company has produced Miniac electronic data processing systems of small-to-medium size. The line is reportedly being redesigned.

Minneapolis Honeywell Regulator Co. (SEE: Datamatic Corp., which is owned by this company.)

Monrobot Laboratory, Monroe Calculating Machine Co., Morris Plains, N. J. Monrobot electronic data processing systems of medium size; line is reportedly undergoing new research and development.

Monroe Calculating Machine Co., 555 Mitchell St., Orange, N. J. Bookkeeping and adding machines modified to punch paper tape as a by-product of standard operations; figures may be printed also on either tape or business forms. *(SEE ALSO: Monrobot Laboratory.)*

Mountain Systems, Inc. (SEE: Airborne Instruments Laboratory, Inc., Modac Div.)

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio. (Electronics Div. is at 3348 W. El Segundo Blvd., Hawthorne, Calif.) Two general-purpose electronic data processing systems of small-to-medium size, one with a binary computer, the other of the decimal type. Accounting machines, adding machines, posting machines, and point-of-sale recorders designed to create punched tape records. Post-Tronic bank bookkeeping equipment using magnetic codes on conventional-type business forms. Also a "moderate-size" general business system, using an electronic computer. Sales-Tronic systems take inputs from pre-punched price tags and customers' and clerks' tokens.

Philco Corp., Tioga & C Sts., Philadelphia 34. Large electronic computer systems.

Potter Instrument Co., Inc., Sunnyside Blvd., Plainview, N. Y. Components for IDP systems including Magnityper high-speed printers, magnetic tape handlers, punched tape readers, random access memory units, etc.

Radio Corp. of America, Front & Cooper Sts., Camden, N. J. Bizmac general-purpose electronic computers of the million-dollar-and-up class, together with accessory equipment. One available output device is an electronic printer using camera to read magnetic tape, a film processor to expose and develop film, and an Electrofax printer to transcribe film image to electro-photosensitive paper, at unusually high speeds.

Ramo-Wooldridge Corp., 5730 Arbor Vitae St., Los Angeles 45. Research and development of data processing equipment reported to be in progress. No details available at press time.

J. B. Rea Co., Inc., 1723 Cloverfield Blvd., Santa Monica, Calif. Readix general-purpose electronic computers of the small-to-medium price range, (less than $100,000) together with accessory equipment.

Reeves Instrument Corp., 215 E. 91 St., New York. No information available at press time on current activities.

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. Line of electronic data processing systems, ranging from smaller Univac 120 and Univac 60 (in the less than $100,000 price range) to large Univac systems costing more than a million dollars. Accessory equipment. Univac File Computers are medium-priced systems. Also specialized equipment such as one custom-built Speed Tally for perpetual inventory information. Complete line of punched card equipment. Point O'Sale equipment for reading pre-punched merchandise tags and punching tapes.

Royal McBee Corp., Westchester Ave., Port Chester, N. Y. Small (desk-size) electronic digital computer, the LGP-30, priced at about $40,000. Also equipment for marginally punched card systems.

Scriptomatic, Inc., 300-16 N. 11 St., Philadelphia 7. Spirit-process addressing equipment controlled by punched cards, capable of card sensing, comparing, and sorting in combination with the addressing operation.

Shepard Laboratories, Inc., Broad St. at Park Ave., Summit, N. J. Electronic high-speed typers, electronic decoders, and electronic "servo transport" digital tape readers.

Smith-Corona Inc., 701 E. Washington St., Syracuse 1, N. Y. Smith-Corona's Kleinschmidt division makes teletypewriter and similar data transmission equipment. *(See listing under Kleinschmidt.)*

Soroban Engineering, Inc., Box 1717, Melbourne, Fla. Components for use in IDP systems, including perforated tape readers, high-speed tape perforators, coding keyboards, automatic tabulators, verifying and reperforating punches, comparators, and custom-built data preparation and output devices.

The Standard Register Co., Campbell & Albany Sts., Dayton 1, Ohio. Stanomatic electronic code senser to "translate" common language information into other machine languages. At time of preparing original documents, data can be coded on them by special ink or carbon deposits (when printed at the factory, or by special registers, typewriters, etc.) Codes can be translated by Stanomatic for such equipment as card punches, tape recorders, tape-reading typewriters, computers, high-speed printers, etc.

Stanford Research Institute, Menlo Park, Calif. Research and development

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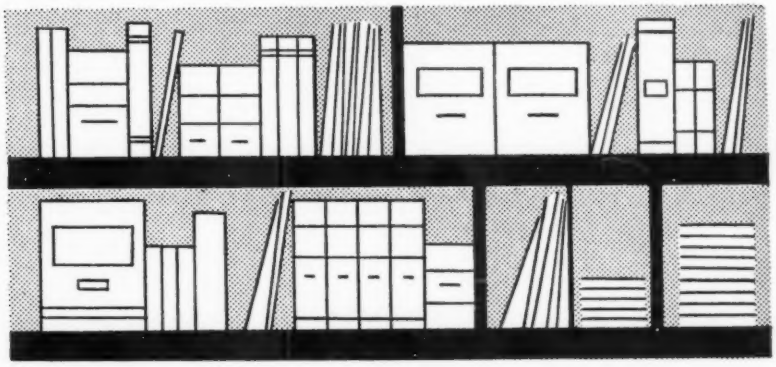
CATALOGS
BOOKLETS, BROCHURES FOR THE OFFICE



OFFICE FURNITURE
And other equipment

Acme Visible Records, Inc., Crozet, Va. *Time Saving Record Systems*, booklet illustrating various styles and methods of visible filing. (1)

Akro-Mils, Inc., P.O. Box 989, Akron 9, Ohio. 32-page booklet *This or This*, on efficient methods of storing and organizing small parts. (2)

All-Steel Equipment Inc., Aurora, Ill. Four-color illustrated catalog with suggested office suites, showing desks, tables, credenzas and allied furniture. (3)

American Microfilming Service Co., 44 Laura St., New Haven, Conn. *Microtape Systems*, folder describing new microrecord filing system. (4)

Arnot-Jamestown Div., Aetna Steel Products Corp., 730 Fifth Ave., New York 19. 16-page brochure on Arnot "Partition-ettes" and furniture components. (5)

Arrow Lamps Inc., 1270 Broadway, New York. Brochure illustrating Whirl-O-Matic "spin action" smoking stands and ash trays. (6)

Art Steel Co., Inc., 170 W. 233 St., New York 63. 56-page illustrated office equipment catalog. *Steelmaster*, covering complete line. (7)

Atlas Stencil Files Corp., 16716 Westfield Ave., Cleveland 10. Catalog. *Vertical Filing Equipment for Offset Plates, Stencils, Negatives, Etc.* (8)

Bankers Box Co., 2607 N. 25 Ave., Franklin Park, Ill. Illustrated booklet, *Manual of Record Storage Practice*, gives details and suggested retention schedules for over 250 office records. (9)

BeLa Div., J & J Tool & Machine Co., 9505 S. Prairie Ave., Chicago. Brochure, *Eight Money Saving Features to Look For When Purchasing Folding Chairs.* (10)

The Bentson Mfg. Co., 652 N. Highland Ave., Aurora, Ill. Full-color brochure, *The Door to Office Comfort*, illustrating line of steel office desks, filing cabinets, credenzas, and companion units. (11)

Bevco-Precision Mfg. Co., 831 Chicago Ave., Evanston, Ill. Catalog on ventilated furniture and costumers. (12)

Brunswick-Balke-Collender Co., 623 S. Wabash Ave., Chicago 5. Contract furniture department catalog on chairs, tables, cabinets, chair desks, and tablet arm chairs. (13)

John D. Brush & Co., Inc., 545 West Ave., Rochester 11, N. Y. Brochure, *Twelve Ways a Sentry Safe Saves Money and Time.* (14)

Burgess-Manning Co., Architectural Prods. Div., 5970 Northwest Highway, Chicago 31. Catalog A-142-A-143, describing acoustical "Hear-Here" telephone booths for office use. (15)

The Celotex Corp., 120 S. LaSalle St., Chicago 3. *Sound Conditioning for the Office*, on uses and applications of acoustical materials in the office. (16)

Central Desk Mfg. Co., 454 N. Armour St., Chicago 22. Catalog on wood office desks—executive, modular and general, tables, credenzas, cabinets and bookcases. (17)

The Challenge Machinery Co., First St., Grand Haven, Mich. Information on movable stock racks and filing cabinets for offset or duplicator plates, F875. (18)

Clark & Gibby, Inc., 8 W. 40 St., New York 18. Literature on executive and general furniture and furnishings. (19)

Columbia Steel Equipment Co., Commerce Drive & Pennsylvania Ave., Fort Washington, Pa. Illustrated *Columbia Miniature Catalog*, showing complete line of desks, typewriter conversion units, bookcases, telephone stands, and conference tables. (20)

Corry-Jamestown Mfg. Corp., Corry, Pa., Brochure, *Steel Age Office Partitions*, describing fiberglass office partitions. (21)

Cramer Posture Chair Co., 625 Adams St., Kansas City, Kansas. Folder describing "Ortho-Tilt" secretarial and administrative chairs. (22)

Currier Mfg. Co., 2448 W. Larpenteur Ave., St. Paul 8, Minn. Folder on office time savers, files, sorters, trays, racks, and cabinets. (23)

Cushman & Denison Mfg. Co., Inc., Carlstadt, N. J. *KE Master Key Control System*, illustrating and describing key filing equipment. (24)

Dependable Mfg. Co., Inc., 2407 Ft. Crook Rd., Bellevue, Neb. Pictures and specifications of various stools, chairs and stands. (25)

Desks, Inc., 71 Fifth Ave., New York 3. Pamphlet, *Your Guide to Buying Office Furniture.* (26)

Diebold, Inc., 818 Mulberry Rd. S.E., Canton 2, Ohio. Catalog illustrating modern safety in record protection, *Diebold Two Hour Safes.* (27)

Dolin Metal Products Inc., 315 Lexington Ave., Brooklyn 16, N. Y. Literature describing three styles of steel transfer files. (28)

Ferris Business Equipment, Inc., 45 Seymour St., Stratford, Conn. Information on 150 models available in mechanized filing equipment. (29)

General Electric Co., Nela Park, Cleveland 12. *Power Groove Fluorescent Lamp Bulletin,* with information on indoor and outdoor lighting applications. (30)

General Electric Co., Building 2, Appliance Park, Louisville, Ky. Specification guide for builders and architects covering Built-In Thinline air conditioners. (31)

The General Fireproofing Co., Youngstown 1, Ohio. *GF Metal Partitions,* catalog with information on the efficient use of office space. (32)

General Plywood Corp., Exec-Units Div., P. O. Box 1403, Louisville 3, Ky. *Efficient, Economical Space Dividers,* with specifications on wood partition systems. (33)

The Globe-Wernicke Co., Norwood, Cincinnati 12. *Standard Techniplan,* illustrated color catalog on the complete line of metal Techniplan modular furniture and partitions. (34)

Guide System & Supply Co., Inc., 335 Canal St., New York 13. Brochure with illustrations and descriptions on Transfile transfer cases and Guide-O-Folder hanging folders. (35)

Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3. *Guth Condensed Catalog,* on fluorescent and incandescent lighting fixtures. (36)

The H-O-N Co., Third & Oak Sts., Muscatine, Iowa. *H-O-N Office Equipment Catalog No. 101,* on steel office furniture. (37)

Hale Industries, Inc., P.O. Box 187, Herkimer, N. Y. Full-color catalog on bookcases of various designs. (38)

Hamilton Mfg. Corp., 2525 State St., Columbus, Ind. *Cosco Office Fashioned Seating,* color catalog on office chairs and business furniture. (39)

Harter Corp., Sturgis, Mich. *Posture Seating Makes Sense,* booklet on steel office chairs and considerations of health, comfort, and efficiency. (40)

Hartman Metal Fabricators, Inc., 133 Murray St., Rochester 6, N. Y. *Multi-Purpose Handling Equipment,* brochure on hook-on tray system for paper handling. (41)

Haskell, Inc., 303 E. Carson St., Pittsburgh 19. *Catalog No. 23,* on budget-priced steel office furniture. (42)

The E. F. Hauserman Co., 6800 Grant Ave., Cleveland 5. *Complete Line Brochure,* in color, on Interior Wall Systems. (43)

Herring-Hall-Marvin Safe Co., 1550 Grand Blvd., Hamilton, Ohio. *Catalog No. 101,* illustrating fire-resistive record safes. (44)

D. C. Hey Co., Inc., 2110 Nicollet Ave., Minneapolis 4. Booklet, *How to Make Your Desk Neater and More Efficient,* describing Viso-Deskplate. (45)

Howe Folding Furniture, Inc., 1 Park Ave., New York 16. Booklet, *Multi-Purpose Use of Space,* on folding office furniture. (46)

Huntington Furniture Corp., P. O. Box 2111, Huntington, W. Va. Catalog on office and other commercial furniture. (47)

The Hygienic Dental Mfg. Co., 1245 Home Ave., Akron 10, Ohio. *Hygienic Foot Comfort Cushions,* color circular illustrating sponge-based fatigue mattings. (48)

Imperial Desk Co., Evansville 7, Ind. Catalog illustrating and describing coordinated groupings of wood office furniture. (49)

Indiana Chair Co., Jasper, Ind. Catalog on clerical, executive, and general office chairs. (50)

Invincible Metal Furniture Co., Manitowoc, Wis. *Invincible Modernette Brochure,* containing information on planning the use of modular office equipment. (51)

Jasper Seating Co., Jasper, Ind. Literature on wood office chairs. (52)

Robert John Co., 202 S. Hutchinson St., Philadelphia 7. *Catalog No. 20,* on modular wood office furniture, with specifications and list prices. (53)

Johnson Chair Co., 7109 Merchandise Mart, Chicago 54. Literature on upholstered wood business chairs. (54)

Karl Mfg. Co., 32-34 Ionia Ave., S. W., Grand Rapids, Mich. Brochure describing Karlo adustable metal stands for typewritters and other office machines. (55)

Kisco Co., Inc., 2400 DeKalb St., St. Louis 4. Literature on Kisco fans and air circulators. (56)

Lansdale Products Corp., Box 568, Lansdale, Pa. *Control is the Modern Way to Business Efficiency,* describing Planomatic control boards. (57)

Lightolier, Inc., 346 Claremont Ave., Jersey City 5, N. J. The Lightolier *"Idea Book",* a brochure on using decorative lighting. (58)

Logan Business Products, Inc., Vue-Fax Div. Literature on vertical-visible record equipment. (59)

Luxo Lamp Corp., 102 Columbus Ave., Tuckahoe, N. Y. Luxo lamp catalog, showing the complete line. (60)

The Maine Mfg. Co., 46 Bridge St., Nashua, N. H. Literature on steel storage, wardrobe, and bookcase equipment. (61)

The B. L. Marble Chair Co., Bedford, Ohio. Catalog on office chairs. (62)

Marsh Wall Products, Inc., Dover, Ohio. *Marlite Catalog,* containing illustrations and descriptions of Marlite plastic-finished wall panels. (63)

Master Products Mfg. Co., 3480 E. 14 St., Los Angeles 23. Catalog on visible filing systems, sales equipment, etc., including sectional filing cabinets. (64)

Mayfair Industries, Inc., 601 Madison Ave., New York 22. *Select-A-Log of Mayfair,* a 16-page booklet on aluminum chairs. (65)

The Mills Co., 965 Wayside Rd., Cleveland 10. *Mills Movable Walls Give You Space Control,* on movable partitions. (66)

Milwaukee Stamping Co., Ferrometal Partitions Div., Milwaukee 4. Brochure on movable metal partitions. (67)

Moselle Meals, Inc., 681 Fifth Ave., New York 22. Catalog on wood office chairs, posture chairs, and other furniture, in contemporary and traditional designs. (68)

Momar Industries, 4323 W. 32 St., Chicago. *Glider 700,* booklet illustrating and describing small-size blueprint filing racks. (69)

Monarch Metal Products, Inc., New Windsor, N. Y. *Catalog No. 4* on punched card accessories, files, cabinets, and tape storage equipment for IDP systems. (70)

National Furniture Mfg. Co., Inc., P. O. Box 209, Evansville, Ind. Literature on upholstered furniture. (71)

Northwest Metal Products Co., 1337 E. Mason St., Green Bay, Wis. Catalog on Northwest "V" expanding filing cabinets. (72)

Parker Steel Products, Inc., 54 N. 11 St., Brooklyn 11, N. Y. Literature on steel storage and wardrobe cabinets. (73)

Peerless Steel Equipment Co., 6600 Hasbrook Ave., Philadelphia 11. *Space Saving File Cabinets,* acetate pull-out device showing means of increasing filing capacity per square foot. (74)

Posting Equipment Corp., 1721 Elmwood Ave., Buffalo 7. *Catalog No. 58* on posting trays, stands, and indexes. (75)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. *Filing Equipment,* 84-page booklet on filing systems and equipment. (76)

Jens Risom Design, Inc., 49 E. 53 St., New York 22. Catalog supplement illustrating contemporary executive desks, chairs, and office furniture. (77)

The 7 Santini Brothers, Inc., 1405 Jerome Ave., Bronx 52, N. Y. Literature on File-Pak record storage containers. (78)

The Shaw-Walker Co., Muskegon, Mich. *Carlyle Executive Desks,* booklet picturing and describing executive desks. (79)

Southland Metals Corp., 2013 First Ave., No., Birmingham, Ala. Brochure on steel lockers. (80)

Spitzka Mfg. Co., 235 Colfax St., N. Sacramento, Calif. Folder, *The Breakthrough in Portable Air Cooler Styling,* on portable coolers. (81)

Standard Furniture Co., Herkimer, N. Y. *Formational Sketchbook,* on modular Contemporary Office Group of furniture. (82)

Steelcase, Inc. P. O. Box 444, Grand Rapids, Mich. *Introducing the Flight Line,* illustrated brochure on office furniture. (83)

Stempel Mfg. Co., 2830 Roberta St., Dallas 3. New 20-page catalog on book and catalog stands, plastic chair mats, and small office furniture. (84)

Stow & Davis Furniture Co., 27 Summer Ave., N. W., Grand Rapids 2, Mich. *Portfolio of Offices,* guide to Stow & Davis line of executive office furniture. NOTE: This catalog priced at $2. Requests should be addressed directly to the company.

Sunroc Corp., Glen Riddle, Pa. Booklet, *Complete Line of Coolers for Every Requirement from Foundry to Executive Suite.* (85)

Tab Products Co., 995 Market St., San Francisco 3. Catalog No. 9 on Spacefinder shelf-type filing cabinets. (86)

The Taylor Chair Co., Bedford, Ohio. Catalog on wood office chairs, posture chairs, and other furniture, in contemporary and traditional designs. (87)

Tiffany Stand Co., 7350 Forsyth Blvd., St. Louis 5. Catalog on office machine stands, book stands, portable tables, etc. (88)

Tubular Specialty Mfg. Co., Inc., 241 Chene St., Detroit 7. *Office Machine Stands,* brochures on Tusco machine stands. (89)

Unistrut Products, 933 Washington Blvd., Chicago 7. *ColorLine Partitions,* catalog illustrating various Unistrut movable partitions. (90)

United States Plywood Corp., 55 W. 44 St., New York 36. *Weldwood Functional Beauty for Business & Institutional Interiors,* on wood panels and partitions. (91)

The Upholstery Leather Group, Inc., 141 E. 44th St., New York 17. *Here's Why Genuine Leather Upholstery Wears as Well as It Looks,* booklet on leather upholstery. (92)

Uvalde Rock Asphalt Co., Azrock Products Div., P. O. Box 531, San Antonio, Tex. *Azrock Floor Products,* color catalog illustrating various applications of resilient floor tiles. (93)

Victor Safe & Equipment, Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. Booklet, *Your Records—and how you can protect them,* on protecting records from fire. (94)

Virginia Metal Products, Inc., Orange, Va. *VMP Mobilwall Movable Steel Partition Folder.* (95)

Visi-Shelf File, Inc., 225 Broadway, New York. *Shelf Filing Catalog No. 2,* 12-page catalog on shelf filing. (96)

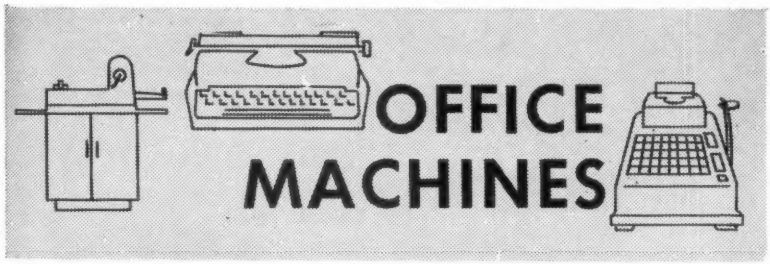
Watson Mfg. Co., Inc., Jamestown, N. Y. *Watson Vertical Filing Units for Various Heights,* booklet illustrating upright record files in various heights and sizes. (97)

Westinghouse Electric Corp., Air Conditioning Div., P. O. Box 510, Staunton, Va. *Westinghouse Puts Air to Work,* booklet with specifications and descriptive data on air conditioning, air handling, and air cleaning equipment. (98)

Wood Office Furniture Institute, 30 Eleventh St., N. W., Washington, D. C. *Listening For Color,* color booklet on the use of color in the office. (99)

Yawman & Erbe Mfg. Co., 1099 Jay St., Rochester 3, N. Y. *Y & E Steel Partitions,* color *Brochure No. 4041,* describing and illustrating the complete Y & E line of movable partitions. (100)

Zonolite Co., 135 S. La Salle St., Chicago 3. *Plaster & Acoustical Systems,* 8-page folder on the use of vermiculite for sound conditioning and fireproofing. (101)



Abbott Coin Counter Co., Inc., 144 St. & Wales Ave., New York 54. *Coin & Currency Handling Equipment,* manual on money handling equipment. (102)

Addo-X, Inc., 300 Park Ave., New York 22. Brochure describing 7000 class front feed bookkeeping machines and "one-key" principle. (103)

Ajax Business Machines, Inc., 112 Magnolia Ave., Westbury, N. Y. Literature on electric numbering and dating machines. (104)

Alison Duplicator Co., 1881 Park Ave., New York 35. Brochure on Model 101 spirit duplicating machine. (105)

Alwac Corp., 13040 S. Cerise Ave., Hawthorne, Calif. Literature on Alwac III-E medium-size electronic digital computers. (106)

American Automatic Typewriter Co., 2323 N. Pulaski Rd., Chicago 39. *Letter Typing Automatically with Auto-typist,* folder describing and illustrating the Auto-typist method of handling routine correspondence. (107)

American Dictating Machine Co., Inc., 65 Madison Ave., New York 16. Literature on the Rex Recorder dictating machine. (108)

American Photocopy Equipment Co., 1920 W. Peterson Ave., Chicago 26. Booklet, *The All-Purpose Copy Maker for Every Business,* on photocopying machines and methods. (109)

Automatic Electric Sales Corp., Northlake, Ill. Booklet, *Ten Ways to Cut Costs,* using P-A-X Business Telephone Systems. (110)

Ayres Corp., Box 1081, Wilmington, Calif. *Ayres Calculer-D Payroll Tax Computer,* brochure illustrating and describing small plastic desk machine for computing Federal payroll taxes. (111)

Bell & Howell Phillipsburg Co., Div. of Bell & Howell Co., Phillipsburg, N. J. *Wider Horizons,* illustrating and describing inserting and mailing machines. (112)

Bendix Computer Div., 5630 Arbor Vitae St., Los Angeles 45. Literature on the Bendix G-15 general purpose digital computer and accessories. (113)

David Bogen Co., P. O. Box 500, Paramus, N. J. *Bogen Communo-Phones Catalog No. 405,* describing inter-office communications equipment. (114)

Bohn Duplicator Corp., 444 Fourth Ave., New York 16. *BDC Contex,* brochure describing ten-key, six-pound calculator. (115)

Burroughs Corp., 6071 Second Ave., Detroit 32. *Looking For An Answer to IDP Input Problems?,* brochure describing Burroughs Punched Tape or Direct-To-Card control-input equipment. (116)

Business Electronics, Inc., 420 Market St., San Francisco 11. Brochure describing correspondence course, *Programming for Business Computers.* (117)

Business Machine Products, Inc., 8 Engle St., Englewood, N. J. Literature on Silent Sentry Typewriter Mount (fastening and silencing device for typewriters). (118)

Calumet Mfg. Co., 6550 N. Clark St., Chicago 26. Booklet, *New Light on Darkrooms,* a darkroom planning handbook. (119)

Cheshire, Inc., 1644 N. Honore St., Chicago 22. Brochure on mass labeling machines. (120)

Clary Corp., 408 Junipero St., San Gabriel, Calif. *Custom Adding Machines,* four-color booklet describing ten-key and full-keyboard adding machines. (121)

Collamatic Electric Collator Corp., Wayne, N. J. *Cutting Collating Costs,* six-page brochure on collating machines and systems. (122)

Con-Mar Mfg. Co., 3130 N. W. 23 St., Oklahoma City, Okla. Literature on heading composing machines for offset printing. (123)

Control Systems, Inc., Plus Computing Machines Div., 5 Beekman St., New York 38. Catalog covering the full line of adding and calculating machines. (124)

Copease Corp., 425 Park Ave., New York 22. Catalog, *Copease Photocopy Machines*, illustrating and describing line of photocopying equipment. (125)

Copy-Craft, Inc., 105 Chambers St., New York 7. Brochure on photocopying machines and methods. (126)

Cormac Photocopy Corp., 80 Fifth Ave., New York 11. *Comac Saves Time, Saves Money*, catalog on line of photocopying machines and methods. (126A)

Cummington Corp., 718 Beacon St., Boston 15. *Smashing the Paper Barrier*, booklet on collating machines and methods. (127)

Cummins-Chicago Corp., 4740 Ravenswood, Chicago 40. *Cummins Perf-O-Reader*, literature on character recognition equipment for electronic data processing. (128)

Curtis-Young Corp., 110 W. 18 St., New York 11. *How to Make a Girl Happy*, on Copy-Right copyholders. (129)

Dage Television Div., Thompson Products, Inc., W. Tenth St., Michigan City. Brochure, *Television as an Office Tool*. (130)

Dennison Mfg. Co., Framingham, Mass., Machine Systems Div. *Print Punch Marking Machine*, booklet on uses of industrial tags imprinted and code-punched for automatic data processing control systems. (131)

The Denominator Co., Inc., 261 Broadway, New York 7. Brochure on manually operated tabulators, with illustrations of 16 applications in varied industrial fields. (132)

Dictaphone Corp., 420 Lexington Ave., New York 17. *Writing Out Loud*, handbook on dictating techniques. (133)

Dictation Disc Co., 170 Broadway, New York 38. Literature on shorthand dictation phonograph records for improving stenographic skills. (134)

John Diebold & Associates, Inc., 40 Wall St., New York 5. *Failures in Business Data Processing . . . and How to Avoid Them*, brochure describing executive course on data processing systems. (135)

Diebold, Inc., 818 Mulberry Rd., S. E., Canton 2, Ohio. *Another Advance in Automatic Rotary Filing*, catalog on motorized fast reference record filing. (136)

Diebold, Inc., Flofilm Div., Westport Ave., Norwalk, Conn. Booklet, *Procedural Microfilming*, on microfilming applications and systems. (137)

Ditto, Inc., 6800 McCormick Rd., Chicago 45. *Integrated Data Processing . . . A Factual Analysis*, on applications of integrated data processing principles to small companies. (138)

Documat, Inc., 385 Concord Ave., Belmont, Mass. Brochure on microfilm cameras and readers. (139)

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. Brochure, *Kodagraph Microfilming for New Economies in Record Keeping*. (140)

ElectroData Div., Burroughs Corp., 460 Sierra Madre Villa, Pasadena, Calif. *Datatron*, brochure describing the Datatron 205 electronic data processing system. (141)

Executone, 415 Lexington Ave., New York 17. Booklet, *Executone Intercom Serves Offices*, on cost cutting and improving communications efficiency by the use of interior communications systems. (142)

Fanon Electric Co., Inc., 98 Berriman St., Brooklyn 8, N. Y. Catalog on office intercommunications systems. (143)

The Filmsort Co., Pearl River, N. Y. Booklet, *Individualized Microfilm Technics*, on case histories of systems employing unitized microfilm records. (144)

Wm. A. Force & Co., 216 Nichols Ave., Brooklyn 8, N. Y. Booklet, *Hand Numbering Machines & Metal Daters*, on office numbering machines. (145)

General Photo Products Co., Inc., 15 Summit Ave., Chatham, N. J. Literature on photocopying equipment, with applications. (146)

The Gray Mfg. Co., 16 Arbor St., Hartford 1, Conn. *Freedom As You Like It*, booklet on executive planning and the use of dictating systems. (147)

Griscombe Products, Inc., 133 W. 21 St., New York 11. Literature on microfilm cameras and readers. (148)

The Haloid Co., Haloid St., Rochester 3, N. Y. Literature on Xerox copying equipment, and its use in preparing offset paper masters. (149)

Heller Roberts Mfg. Corp., 700 Jamaica Ave., Brooklyn 8, N. Y. Robert Numbering Machine Div. *Form 100-01*, describing automatic numbering machines. (150)

Douglas Homs Co., 326 Jackson St., San Francisco 11. Catalog on fifteen types of numbering and dating machines for general office use. (151)

Hunter Photo-Copyist, Inc., 566 Spencer St., Syracuse, N. Y. *Photocopy Operator's Manual and Guide*, booklet describing training of the photocopy operator. (152)

Kenro Graphics, Inc., Chatham, N. J. Booklet, *"Kenro Vertical 18" Camera*, on producing negatives for offset duplicating. (153)

Kwik Kopy Co., 608 S. Dearborn St., Chicago 5. *The 11 Most Important Questions About Photocopy Machines*, brochure on the uses of a photocopying machine. (154)

Lamson Corp., Syracuse 1, N. Y. *Airtube* on *Target*, catalog describing applications of pneumatic tube systems in industry. (155)

Lathem Time Recorder Co., 76 Third St., N. W., Atlanta 8, Ga. Catalog describing time recorders, watchmen's clocks, time stamps, and numbering machines. (156)

J. M. Loge, Sound Engineers, 2171 W. Washington Blvd., Los Angeles 18. Literature on Kwik-Kall office intercommunications systems. (157)

F. G. Ludwig, Inc., Old Saybrook, Conn. Folder on new Contoura-Matic automatic photocopying machine. (158)

Marchant Calculators, 1475 Powell St., Oakland 8, Calif. Pamphlet, *Index to Modern Figuring by Marchant Methods*, a listing of methods of figurework in a wide variety of fields. (159)

J. Curry Mendes Corp., 1 Curry Lane, Canton, Mass. Booklet illustrating use of JCM collators for paper gathering and booklet making. (160)

Miles Reproducer Co., Inc., 812 Broadway, New York 3. Literature on self-powered recorder and transcriber for conference recording and dictation. (161)

Mohawk Business Machines Corp., 944 Halsey St., Brooklyn 33, N. Y. Brochure on Midgetape "300" pocket-size battery-operated dictating machine. (162)

Monroe Calculating Machine Co., Inc., 555 Mitchell St., Orange, N. J. Catalog on calculating, adding, accounting, and data processing equipment. (163)

Nashua Corp., Nashua, N. H. Booklet on gummed tape and dispensers. (164)

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio. Booklet, *How to Save Money on Your Accounting*, on mechanized bookkeeping methods. (165)

Nord Mfg. Corp., 366 Jericho Turnpike, Mineola, N. Y. *Eye Fidelity Copy Magic*, brochure on photocopying equipment and methods. (166)

North Electric Co., Galion, Ohio. Brochure, *The Perfect Office Telephone—The Ericofon*, on office intercommunications equipment. (167)

NuArc Co., Inc., 824 S. Western Ave. Chicago 12. *Bulletin 230B*, describing NuArc Rapid Printer, for making offset plates. (168)

Olkon Corp., Vanguard Business Machines Div., 150 Sylvan Ave., Englewood Cliffs, N. J. *A New Era in Dictation*, on Vanguard dictating machines. (169)

Ozalid Div., General Aniline & Film Corp., Johnson City, N. Y. Literature on the Printmaster 1000, high-volume whiteprinting machine. (170)

P & H Sales Corp., 5650 N. Western Ave., Chicago 45. Brochure on Peck & Harvey Copymaster and Arrow whiteprint machines and order systems. (171)

Pitney-Bowes, Inc., Walnut & Pacific Sts., Stamford, Conn. Booklet, *Hand Folding Is Too Costly Today*, describing office folding machines, with case histories. (172)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. *Only*

We Make All Three, four-color brochure on standard, noiseless, and electric typewriters. (173)

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16. *Black Magic in Colors,* brochure on Rex-Rotary D280 twin cylinder stencil duplicators. (174)

Rotolite Sales Corp., Essex St., Stirling, N. J. *Dry White Copies Right Now With Rotolite,* describing whiteprint machine. (175)

Rovico, Inc., 318 Market St., Newark 2, N. J. Illustrated brochure describing and illustrating photocopying equipment, paper, and supplies. (176)

Royal McBee Corp., Port Chester, N. Y. *Royal Precision Electronic Computer,* brochure describing the LGP-30 desk-size, mobile electronic computer. (177)

The Shredmaster Corp., 75 Varick St., New York. Catalog sheets describing and illustrating portable and table office model paper shredding machines. (178)

Silver Bells, Ltd., 1637 Del Monte Blvd., Seaside, Calif. *Controller Calculator,* brochure on pocket-size calculator. (179)

Soroban Engineering, Inc., P. O. Box 1717, Melbourne, Fla. Brochure on paper tape data perforation and output tabulating equipment. (180)

The Soundscriber Corp., Box 1941, New Haven 9, Conn. *Complete and Compatible Dictation,* brochure on dictating equipment. (181)

Speedliner Duplicator Co., 4404 Ravenswood Ave., Chicago 40. Booklet, *How to Use Spirit Duplicating,* with samples. (182)

The Staplex Co., 777 Fifth Avenue, Brooklyn 32, N. Y. Literature on line of automatic and semi-automatic electric stapling machines. (183)

Stromberg-Carlson Co., Special Products Div., 1400 N. Goodman St., Rochester 3, N. Y. *Banish These Seven Telephone Annoyances,* booklet describing Dial-X intercommunicating telephone systems. (184)

Superior Typewriter Co., 34 Hubert St., New York 13. *Office Machines — World's Largest Listing,* covering rebuilt office machines. (185)

Swift Business Machines Corp., 51 Church St., Great Barrington, Mass. *Swift Adding Machine,* pamphlet illustrating special features of portable adding-listing machine. (186)

Systematics, Inc., 60 E. 42 St., New York 17. *Systematics Intercouplers,* booklet describing uses of inter-machine coupling in integrated data processing systems. (187)

Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago 23. Catalog covering intercommunications equipment, with information on how to figure requirements. (188)

Thomas Collators, Inc., 50 Church St., New York 7. *Collating Cost Calculator,* device for calculating savings to be derived from machine collating. (189)

Times Facsimile Corp., 540 W. 58 St., New York 19. Literature on the Stenafax facsimile machine for making duplicating masters electronically. (190)

Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18. *Your Keys to Better Business,* illustrated catalog on adding and calculating machines. (191)

The Wadsworth Mfg. Co., P. O. Box 125, Wadsworth, Ohio. Brochure on collating machines and accessories. (192)

Weber Marking Systems, Div. of Weber Addressing Machine Co., Inc., 215 E. Prospect Ave., Mount Prospect, Ill. *Now It's Web-O Printing,* booklet illustrating touch-stencil systems for combining order processing paperwork with shipment addressing. (193)

The Wheeler Insulated Wire Co., Inc., 150 E. Aurora St., Waterbury 20, Conn. Literature on sound-powered telephones with a portable reel system (for cord) for temporary emergency communication. (194)

The Wright Line, Inc., 160 Gold Star Blvd., Worcester, Mass. Booklet on data processing accessory equipment and motorized files. (195)

Accountants' Supply House, 305 Canal St., New York 13. 100-page catalog on bookkeeping and business forms. (196)

Ace Fastener Corp., 3415 N. Ashland Ave., Chicago 13. Catalog sheet describing complete line of stapling equipment. (197)

Advance Floor Machine Co., 4100 Washington Ave., N., Minneapolis 12. *How To Select the Right Floor Machine for Your Building,* six-page brochure on scrubbing and polishing machines. (198)

G. J. Aigner Co., 426 S. Clinton St., Chicago 7. Literature on bond, mimeo, and duplicator papers with reinforced binding edge. (199)

American Writing Paper Corp., 10 Eagle-A Ave., Holyoke, Mass. Test kit on Eagle-A business papers. (200)

Avery Adhesive Label Corp., 1616 S. California Ave., Monrovia, Calif. Brochure describing the use of Correction Tape for correcting spirit masters. (201)

The Baltimore Business Forms Co., 3120-56 Frederick Ave., Baltimore 29. *Forms Inventory and Control Book,* for keeping records of form specifications, usage, and reordering dates. (202)

C. L. Barkley & Co., 1220 W. Van Buren St., Chicago 7. Catalog on complete line of filing supplies, including shelf filling and special indexing. (203)

The Bates Mfg. Co., 30 Vesey St., New York 7. Catalog illustrating numbering machines, staplers, telephone indexes, stamp pads, etc. (204)

Beach Publishing Co., 19829 W. McNichols Rd., Detroit 19. Folder describing and illustrating Beach's "Common Sense" expense books and sheets. (205)

Bonnar-Vawter, Inc., 96 Dunbar St., Keene, N. H. *Forms Designs and Model Systems,* containing descriptions and drawings of office forms and systems. (206)

Bro-Dart Industries, 59 E. Alpine St., Newark 5, N. J. Circular on Bro-Dart Safety Shear paper cutter. (207)

Business Efficiency Aids, Inc., Skokie, Ill. *Magne-Dex Visible Records,* booklet illustrating magnetic card filing systems. (208)

Can-Pro Corp., 19 E. McWilliams St., Fond du Lac, Wis. Four-page folder on mail bags and mailroom equipment. (209)

Carter's Ink Co., 239 First St., Cambridge, Mass. Booklet, *How to Be an Expert on Carbons and Ribbons.* (210)

Carteret Printing Co., 480 Canal St., New York 13. *Tools for Business,* booklet illustrating stock and custom-made business forms and systems and accessories. (211)

Cel-U-Dex Corp., P. O. Box 1127, Newburgh, New Windsor, N. Y. Catalog on filing supplies and indexing. (212)

W. A. Charnstrom Co., 422 S. Seventh St., Minneapolis 15. Four-page brochure, *The New Portable Revolutionary Mailbag Holder.* (213)

Chart-Pak, Inc., 1 River Rd., Leeds, Mass. *Visualization Made Easier,* catalog, illustrating adhesive-backed pressure-sensitive tapes, templates, and symbols for graphs, charts, and layouts. (214)

Clarotype Co., Inc., 261 Broadway, New York 7. Circular containing work tips for typists. (215)

Columbia Ribbon & Carbon Mfg. Co., Inc., Glen Cove, N. Y. *Ribbon and Carbon Brochure,* containing information on ribbons,

carbons, and hectograph duplicating supplies. (216)

Cushman & Denison Mfg. Co., Inc., Carlstadt, N. J. *See How You Can Use A Felt-Tipped Pen,* brochure on applications of felt-tipped marking instruments. (217)

Delbridge Calculating Systems, Inc., 2510 Sutton Ave., St. Louis 17. *Pre-Calculated Payroll Rate Charts—"Fastest—Easiest Way to Figure Payroll Earnings!"* (218)

Dennison Mfg. Co., 300 Howard St., Framingham, Mass. Literature and samples on the complete Dennison line of addressing labels. (219)

Dolin Metal Products, Inc., 315 Lexington Ave., Brooklyn 16, N. Y. *A New Standard for Space Utilization,* on mobile storage systems. (220)

Eagle Pencil Co., 703 E. 13 St., New York 9. *Pencil Selector,* a 16-page color booklet for selecting the right pencil for the right job. (221)

Erie Art Metal Co., 1602 E. 18 St., Erie, Pa. Literature describing Dan Dee steel wastebaskets, hampers, self-closing containers, and boxes. (222)

Esleeck Mfg. Co., Turners Falls, Mass. *Prove-It-Yourself Kit,* containing samples of Fidelity Onion Skin papers. (223)

Evans Specialty Co., Inc., P. O. Box 8128, Richmond 23, Va. *Evans Office Aids,* on collating and gathering. (224)

Ever Ready Calendar Mfg. Co., 150 Bay St., Jersey City 3, N. J. Catalog illustrating desk calendars in all sizes, colors, and styles. (225)

Ezyindex Products Corp., 153-13 Northern Blvd., Flushing 54, N. Y. *Color—To Assure Maximum Reference,* on custom indexing for catalogs, reports, manuals, etc. (226)

Michael Frumkin, 87-11 35 Ave., Jackson Heights 72, N. Y. Booklet, *Typex, the Miracle Type-Cleaner.* (227)

General Electric Co., Nela Park, Cleveland 12. Bulletin, *Group Relamping Pays Dividends,* on how replacing lamps before they burn out can often save time and money. (228)

The Globe-Wernicke Co., Norwood, Cincinnati 12. *Verti-Swing,* eight-page catalog on Verti-Swing hanging folders, systems, and equipment. (229)

George B. Graff Co., 54 Washburn Ave., Cambridge 40. Folder on Graffco file signals, map tacks, and flags. (230)

Graphic Systems, 55 W. 42 St., New York 36. *Graphic Visual Control,* 24-page illustrated booklet on Boardmaster Systems for production, scheduling, inventory, sales, etc. (231)

The Griffin Mfg. Co., 191 Lyndhurst St., Rochester 5, N. Y. *Tools for the Graphic Art,* catalog. (232)

Otto Gruenhut Pen Co., 277 Broadway, New York 7. Illustrated catalog sheets on desk sets, ball point pens, and pen and pencil sets. (233)

Hammermill Paper Co., 1606 East Lake Rd., Erie 6, Pa. *Hammermill Manual of Paper Information,* containing data on paper grades, sizes, and colors. (234)

Philip Hano Co., Inc., Holyoke, Mass. Folder, *The Complete Line of Hano Business Systems.* (235)

Milo Harding Co., 500 S. Monterey Pass Rd., Monterey Park, Calif. *Tempo Stencil Tips to Typists,* booklet on how to prepare stencils more easily and with better results. (236)

Heller Roberts Mfg. Corp., 700 Jamaica Ave., Brooklyn 8, N. Y. Heller Industrial Fastener Division *Leaflet No. 1500-04,* on mailers, stitchers, tackers, and staplers. (237)

The Kohlhaas Co., 8012 S. Chicago Ave., Chicago 17. *The Answers for Sorting Efficiency,* brochure on the use of vertical sorters in office routines. (238)

C. Howard Hunt Pen Co., Seventh & State Sts., Camden 1, N. J. Service booklet on pencil sharpeners, with information on location, models, care, and use. (239)

Hush-A-Phone Corp., 65 Madison Ave., New York 16. Descriptive literature on the Hush-A-Phone telephone silencer. (240)

L. Hyman & Sons Corp., 102 Prince St., New York 12. Literature on Duo-Tang looseleaf, brief, and presentation covers. (241)

The Ideal System Co., 346 S. Flower St., Los Angeles 17. Catalog on 198 simplified accounting and tax records for small businesses. (242)

Ideas, Inc., Laramie, Wyo. *Eliminating Hazardous Electric Cords to Office Machines,* brochure illustrating Electriduct "stumble-proof" extension cord. (243)

Max Isaacs, 1019 McDonald Ave., Brooklyn 30, N. Y. Folder illustrating wage rate calculating books, with wages to $5 an hour. (244)

W. R. Kline Co., 1062 Stuyvesant Ave., Irvington 11, N. J. Literature on aluminum self-locking binding posts. (245)

Labelon Tape Co., Inc., 450 Atlantic Ave., Rochester 9, N. Y. Catalog on office layouts, organizational charting, process and flow charting, and statistical charting. (246)

Lansdale Products Corp., Box 568, Lansdale, Pa. Condensed catalog on staplers, folders, safety cutters, and copyboards. (247)

Lassco Products, Inc., 485 Hague St., Rochester 6, N. Y. *Low Cost Equipment for Bindery Service in the Print Shop,* on paper drills and CorneRounders. (248)

Le Febure Corp., 716 Oakland Rd., N. E., Cedar Rapids, Iowa. *Cycle Billing Your Accounts Receivable,* booklet illustrating simplified method of handling accounts receivable. (249)

The Letterex Corp., 1114 Half St., S. W., Washington 24, D. C. *Smart Secretaries State Standards,* on disposable carbon-manifold sets. (250)

Lindy Sales Co., 9601 W. Jefferson Blvd., Culver City, Calif. Illustrated catalog sheets on various models and colors of ball point pens. (251)

Lit-Ning Products Co., 3907 Duquesne Ave., Culver City, Calif. Catalog illustrating over 50 desk-top items for organizing paper work. (252)

Management Control Charts Co., 1731 N. Wells St., Chicago 14. Brochure covering Coffield visual and interchangeable control charts for management, production planning, and sales. (253)

Manpower, Inc., 820 N. Plankinton Ave., Milwaukee 3. Booklet, *100 Suggestions for Hiring and Holding Help.* (254)

Master Products Mfg. Co., 3480 E. 14 St., Los Angeles 23. Literature on dividers, tabs, fly-leaves, and other indexing equipment. (255)

Joshua Meier Co., Inc., 601 W. 26 St., New York 1. Booklet, *Under Cover But In Sight With V P D,* on presentation binders, photo albums, etc., with transparent plastic covers to protect papers. (256)

M. C. Mieth Manufacturers, 660 Herbert St., Port Orange, Fla. *Catalog M-200,* illustrating complete line of hand and desk ticket punches. (257)

Millers Falls Paper Co., Millers Falls, Mass. Booklet, *One Lesson Course in Onion Skin Papers,* with samples of Ezerase papers. (258)

Moore Business Forms, Inc., Niagara Falls, N. Y. *Forms for the Nine Key Operations of Business,* booklet describing requirements of forms for controlling major key operations of business. (259)

P. O. Moore, Inc., Glen Riddle, Pa. Catalog on Key Control systems. (260)

Bert M. Morris Co., 8651 W. Third St., Los Angeles 48. Catalog on "Matched Desk Top Equipment," ranging from sponge cups to electric pencil sharpeners. (261)

I. T. Morris Co., Box 126, Canandaigua, N. Y. *What's New in Aerosols,* bulletin describing new method for cleaning business machine type and platens. (262)

The Multistamp Co., P. O. Box 1249, Norfolk 1, Va. Illustrated catalog on Multistamp stencil duplicators, supplies, and accessories, with sample stencil. (263)

The National Blank Book Co., Holyoke, Mass. 192-page *Better Records* catalog, in color, showing over 2,000 forms and binders for record keeping. NOTE: This item is priced at $1. Requests should be addressed directly to the company.

National Vulcanized Fibre Co., P. O. Box 311, Wilmington, Del. Catalog sheets on Vul-Cot office wastebaskets. (264)

Neva-Clog Products, Inc., P. O. Box 512, Bridgeport, Conn. Catalog folder describing and giving specifications on all products, including staplers and supplies. (265)

New England Paper Punch Co., 89 Washington Ave., Natick, Mass. Folder illustrating complete line of Clix paper punches. (266)

Newport Business Forms Co., Inc., P. O. Box 976, Newport News, Va. Stock business forms catalog, covering 45 sizes and styles. (267)

The Northwest Paper Co., Cloquet, Minn. Four-color folder illustrating offset work possible with Mountie Offset paper. (268)

Office Products, Inc., 26029 W. Eight Mile Rd., Detroit 40. Literature on metal and plastic label holders for ring and post binders. (269)

Oravisual Co., Inc., Box 11150, St. Petersburg 33, Fla. Catalog of Oravisual equipment for use in group communication and training. (270)

Oxford Filing Supply Co., Inc., Garden City, N. Y. *How To Use Oxford Pendaflex,* illustrated manual on new Pendaflex filing systems. (271)

Parsons Paper Co., Holyoke, Mass. Booklet, *How to Get What You Need in Record-Keeping Papers and Index Cards.* (272)

Pitney-Bowes, Inc., Walnut & Pacific Sts., Stamford, Conn. *29 Timely Mailing Tips,* booklet on how to use the mails most efficiently. (273)

Polychrome Corp., 2 Ashburton Ave., Yonkers 2, N. Y. Catalog on supplies for offset and stencil duplicating machines. (274)

Port Huron Sulphite & Paper Co., Port Huron, Mich. Literature on Huron Copysette, for making typewritten copies efficiently. (275)

W. H. Pusch, 427 W. Lynwood, San Antonio 12, Tex. *Seventy-Eighter,* leaflet describing slide rule for installment payment and charge refund computations. (276)

Record Controls, Inc., 209 S. La Salle St., Chicago 4. Fifth edition of 46-page booklet, *Retention and Preservation of Records with Destruction Schedules.* NOTE: This item is priced at $4. Requests should be addressed directly to the company.

The Recordplate Co., 130 N. Fair Oaks Ave., Pasadena 1, Calif. *Unit Control Systems to Help Business,* catalog illustrating small visible and loose leaf equipment and methods. (277)

Reed Mfg. Co., 1045 Main St., Waltham 54, Mass. Literature on security bars for office files, and on triple combination padlocks. (278)

Reliance Pen & Pencil Corp., 22 S. Sixth Ave., Mt. Vernon, N. Y. Complete illustrated catalog of popular and specialty hand writing instruments. (279)

H. H. Renneker, Inc., P. O. Box 9235, San Diego 9, Calif. Circular on Tele-Rest adjustable telephone shoulder cradle to free hands while using the phone. (280)

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16. *Electro-Rex ABC,* booklet illustrating how to prepare originals for Electro-Rex stencils. (281)

Royal Register Co., Inc., Simon St., Nashua, N. H. *Catalog G,* on standard and custom forms, and on disposable copy sheets. (282)

Schlegel Mfg. Co., 1555 Jefferson Rd., Rochester 1, N. Y. *Pull Fasteners,* brochure and sample showing how papers, documents, checks, etc., can be held together neatly. (283)

Sengbusch Self-Closing Inkstand Co., 2222 W. Clybourn St., Milwaukee 3. *Catalog No. 47* on complete line of desk sets, desk trays, moisteners, sponge cups, and other desk accessories. (284)

The Shaw-Walker Co., Muskegon, Mich. *Office Guide,* 252-page catalog illustrating and describing 5,000 items of office equipment and systems. (285)

The C. E. Sheppard Co., 44-01 21 St., Long Island City 1, N. Y. Color folder on Multi-Rite Mercury "one-writing" pegboard accounting systems for accounts receivable and payroll. (286)

Charles C. Smith, Inc., Exeter, Neb. Illustrated catalog covering filing supplies, including signals, guides, clips, label holders, indexing, etc. (287)

Southern Folder & Index Co., Inc., P. O. Drawer 1232, El Dorado, Ark. Literature on filing indexes, folders, and guides. (288)

Specialty Ink Co., Inc., 1011 E. 46 St., Brooklyn 3, N. Y. *Booklet No. 56,* illustrating various types of Aero Brand inks. (289)

Spot Carbon Products, 54 Lafayette St., New York. Samples of spot carbonized forms for a variety of business systems. (290)

Standard Stationery Supply Co., 1020 S. Wabash Ave., Chicago 5. 384-page catalog with illustrations and descriptions of office supplies, furnishings, and equipment. (291)

Statistical Tabulating Corp., 53 W. Jackson, Chicago 4. *Methods, Manpower, Machines,* booklet describing clerical cost cutting by the use of a business service. (292)

Steck Office Equipment, P. O. Box 16, Austin, Tex. Illustrated catalog and price list, covering adjustable ledger trays. (293)

Stock Forms Co., Div. of Moore Business Forms, Inc., 491 Dean St., Englewood, N. J. *Rediform Speedicopy Sets,* brochure describing clean, quick way to type carbon copies, with samples. (294)

Tauber Plastics, Inc., 200 Hudson St., New York 13. Booklet, *Bind Your Own Sheets and Booklets,* on plastic binding. (295)

Tension Envelope Corp., 19th & Campbell Sts., Kansas City 8, Mo. *Idea Kit,* with current samples of mailing, filing, and systems envelopes designed to improve efficiency. (296)

"Tops" Business Forms, 107 N. Wacker Drive, Chicago 6. 28-page illustrated catalog on business forms for office, warehouse, factory, traffic, professional, and general business. (297)

Triner Scale & Mfg. Co., 2714 W. 21 St., Chicago 8. *Over-Stamping is Costly,* booklet on postal scales, illustrating styles and methods of weighing. (298)

Uarco, Inc., 7902 S. Ashland Ave., Chicago 20. *Forms Handling Equipment,* portfolio illustrating equipment that speeds the "after-handling" of business forms. (299)

The Wama Co., Industrial Bldg., Baltimore 2. Literature on desk nameplates, stock and custom signs for the office. (300)

Watson Mfg. Co., Inc., 63 Taylor St., Jamestown, N. Y. *A Revolution in Filing Procedure,* case study on custom-built shelf filing which gives a new concept of the responsibility of file clerks. (301)

Weldon Roberts Rubber Co., 351-365 Sixth Ave., Newark 7, N. J. *Weldon Roberts Eraser Catalog,* illustrated in color. (302)

Byron Weston Co., Dalton, Mass. Booklet containing samples of Weston Bond papers. (303)

Zephyr American Corp., 95 Morton St., New York 14. Literature on desk-top rotary card files. (304)

Zip-O-Riter Co., 3875 Garland St., Wheat Ridge, Colo. Brochure on the Zip-O-Riter spirit device for addressing from record cards and for printing headings on tabulating and accounting forms. (305)

MISCELLANEOUS

Advance Floor Machine Co., 4100 Washington Ave., N., Minneapolis 12. *Daily Work Planning Guide,* a wall-hanging pad with suggested schedules for daily building maintenance operations. (306)

Alexander Hamilton Institute, Inc., 71 W. 23 St., New York 10. Booklet, *Forging Ahead in Business,* on methods to develop executive talents. (307)

Appleby Leather Products, Inc., 24 E. 28 St., New York 16. Literature on luggage and leather goods for a variety of purposes. (308)

Arlington Aluminum Co., 19011 W. Davidson Ave., Detroit 23. Brochure, *5 Way Presentation Easel.* (309)

Bureau International de Documentation, 250 W. 57 St., New York 19. Brochure, *Foreign Press Clipping and Information Service,* with information on getting publicity releases into print. (310)

Cartoons-of-the-Month, Roslyn, N. Y. Information on syndicated cartoon panels drawn by American artists, for house magazine editors. (311)

Corry-Jamestown Mfg. Corp., Corry, Pa. *Discover New Correlation,* 12-page illustrated brochure on color styling in office planning. (312)

John Diebold & Associates, Inc., Management Science Training Institute, 40 Wall St., New York 5. *Education for Data Processing,* a Great Issues Lecture delivered at Dartmouth College by John Diebold. (313)

Eaton Paper Corp., Pittsfield, Mass. *The Perfect Secretary,* 30-page booklet on office behavior, with "tricks of the trade." NOTE: This item is priced at ten cents. Requests should be addressed directly to the company.

Ebasco Services, Inc., 2 Rector St., New York 6. *Space Planning Brochure,* on Ebasco's management consulting-engineering services for facilities planning problems. (314)

General Electric Co., Nela Park, Cleveland 12. *Office Lighting Manual,* a bulletin discussing the effectiveness of available lighting methods, materials, and types of equipment. (315)

Hild Floor Machine Co., Inc., 1217 W. Washington Blvd., Chicago 7. Booklet, *Floor Maintenance Equipment and Supplies.* (316)

Indiana Cash Drawer Co., Shelbyville, Ind. Literature on counter cash drawers and cash drawers for use with adding machines and autographic registers. (317)

Invincible Metal Furniture Co., Manitowoc, Wis. *Planning Kit,* consisting of drawing paper and adhesive back templates for designing office layouts. (318)

Walter G. Legge Co., Inc., 101 Park Ave., New York 17. *Mr. Higby and the Gremlin,* booklet on floor maintenance for safety, covering treatment and maintenance of all types of surfaces. (319)

Lightolier, Inc., 346 Claremont Ave., Jersey City 5, N. J. *Pocket Catalog,* a guide to the selection of proper office lighting. (320)

Lundstrom Laboratories, Inc., P. O. Box 750, Herkimer, N. Y. Brochure with information on the use of Densiwood center posts on office desks. (321)

Marchant Calculators, Inc., 1475 Powell St., Oakland 8, Calif. 72-page booklet, *Statistical Quality Control in Action,* an illustrated description of applied quality control techniques. (322)

Van D. Mark, P. O. Box 44, St. Clair, Mich. *Inventory Control Elements,* pamphlet describing nine principal elements and their effect on inventory costs and turnover. (323)

The Mechanical Secretary, 1123 Broadway, New York 10. *Pointers That Help You Write Letters That Sell.* NOTE: This item limited to requests from New York City. (323A)

G. & C. Merriam Co., Springfield, Mass. Booklet, *The Only Way to Get Letter-Perfect Typing,* on how to place dictionaries in an office. (324)

Metalcraft, Inc., 1619 S. Federal Ave., Mason City, Iowa. Booklet, *Simple, Efficient Property Control.* (325)

Moore Business Forms, Inc., Niagara Falls, N. Y. *Basic Steps Toward Automation of Business Systems,* booklet describing five basic steps in planning an automated data processing system. (326)

Boyce Morgan Associates, Inc., 1800 H St., N. W., Washington 6, D. C. *Better Business By Telephone,* new index of material available for telephone training. (327)

Muzak Corp., 229 Fourth Ave., New York 3. Booklet, *An Answer to Worker Tension,* describing the use of music to minimize worker fatigue, boredom, and tension. (328)

Naremco Services, Inc., 555 Fifth Ave., New York 17. *Paperwork, Liability or Asset,* case studies on how to cut office paperwork costs. (329)

National Office Management Association, Willow Grove, Pa. *1957 NOMA Bibliography for Office Management,* 48-page compilation of listings of articles and books on management subjects.
NOTE: This item is priced at $5. Requests should be addressed directly to the association.

Neenah Paper Co., Neenah, Wis. *The Right Letterhead for You,* booklet on designing the right letterhead for the company. (330)

The Nestle Co., Inc., 2 William St., White Plains, N. Y. Brochure describing Nestle's single-service beverage pack program. (331)

Personnel Management Abstracts. P. O. Box 71, Benjamin Franklin Station, Washington 4, D. C. Information on *Personnel Management Abstracts,* a quarterly digest of articles, books, cases, and exhibits in the field of personnel management. (332)

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☐ 8	☐ 33	☐ 58	☐ 83	☐ 108	☐ 133
☐ 9	☐ 34	☐ 59	☐ 84	☐ 109	☐ 134
☐ 10	☐ 35	☐ 60	☐ 85	☐ 110	☐ 135
☐ 11	☐ 36	☐ 61	☐ 86	☐ 111	☐ 136
☐ 12	☐ 37	☐ 62	☐ 87	☐ 112	☐ 137
☐ 13	☐ 38	☐ 63	☐ 88	☐ 113	☐ 138
☐ 14	☐ 39	☐ 64	☐ 89	☐ 114	☐ 139
☐ 15	☐ 40	☐ 65	☐ 90	☐ 115	☐ 140
☐ 16	☐ 41	☐ 66	☐ 91	☐ 116	☐ 141
☐ 17	☐ 42	☐ 67	☐ 92	☐ 117	☐ 142
☐ 18	☐ 43	☐ 68	☐ 93	☐ 118	☐ 143
☐ 19	☐ 44	☐ 69	☐ 94	☐ 119	☐ 144
☐ 20	☐ 45	☐ 70	☐ 95	☐ 120	☐ 145
☐ 21	☐ 46	☐ 71	☐ 96	☐ 121	☐ 146
☐ 22	☐ 47	☐ 72	☐ 97	☐ 122	☐ 147
☐ 23	☐ 48	☐ 73	☐ 98	☐ 123	☐ 148
☐ 24	☐ 49	☐ 74	☐ 99	☐ 124	☐ 149
☐ 25	☐ 50	☐ 75	☐ 100	☐ 125	☐ 150

☐ 151	☐ 180	☐ 209	☐ 238	☐ 267	☐ 296	☐ 325
☐ 152	☐ 181	☐ 210	☐ 239	☐ 268	☐ 297	☐ 326
☐ 153	☐ 182	☐ 211	☐ 240	☐ 269	☐ 298	☐ 327
☐ 154	☐ 183	☐ 212	☐ 241	☐ 270	☐ 299	☐ 328
☐ 155	☐ 184	☐ 213	☐ 242	☐ 271	☐ 300	☐ 329
☐ 156	☐ 185	☐ 214	☐ 243	☐ 272	☐ 301	☐ 330
☐ 157	☐ 186	☐ 215	☐ 244	☐ 273	☐ 302	☐ 331
☐ 158	☐ 187	☐ 216	☐ 245	☐ 274	☐ 303	☐ 332
☐ 159	☐ 188	☐ 217	☐ 246	☐ 275	☐ 304	
☐ 160	☐ 189	☐ 218	☐ 247	☐ 276	☐ 305	
☐ 161	☐ 190	☐ 219	☐ 248	☐ 277	☐ 306	
☐ 162	☐ 191	☐ 220	☐ 249	☐ 278	☐ 307	
☐ 163	☐ 192	☐ 221	☐ 250	☐ 279	☐ 308	
☐ 164	☐ 193	☐ 222	☐ 251	☐ 280	☐ 309	
☐ 165	☐ 194	☐ 223	☐ 252	☐ 281	☐ 310	
☐ 166	☐ 195	☐ 224	☐ 253	☐ 282	☐ 311	
☐ 167	☐ 196	☐ 225	☐ 254	☐ 283	☐ 312	☐ 126A
☐ 168	☐ 197	☐ 226	☐ 255	☐ 284	☐ 313	☐ 323A
☐ 169	☐ 198	☐ 227	☐ 256	☐ 285	☐ 314	
☐ 170	☐ 199	☐ 228	☐ 257	☐ 286	☐ 315	
☐ 171	☐ 200	☐ 229	☐ 258	☐ 287	☐ 316	
☐ 172	☐ 201	☐ 230	☐ 259	☐ 288	☐ 317	
☐ 173	☐ 202	☐ 231	☐ 260	☐ 289	☐ 318	
☐ 174	☐ 203	☐ 232	☐ 261	☐ 290	☐ 319	
☐ 175	☐ 204	☐ 233	☐ 262	☐ 291	☐ 320	
☐ 176	☐ 205	☐ 234	☐ 263	☐ 292	☐ 321	
☐ 177	☐ 206	☐ 235	☐ 264	☐ 293	☐ 322	
☐ 178	☐ 207	☐ 236	☐ 265	☐ 294	☐ 323	
☐ 179	☐ 208	☐ 237	☐ 266	☐ 295	☐ 324	

Name ..... Title ..... Company .....

Address ....

work. The Institute worked on ERMA, a bank bookkeeping system using magnetic codes on paper documents.

Stromberg-Carlson Co., Div. of General Dynamics Corp., Rochester 3, N.Y. New SC-5000 Electronic Printer uses combination of xerographic principle and Charactron shaped-beam tube to print out computer data at speeds to 4,680 lines a minute. Euclid modular components can be used to build electronic data processing systems; the design permits location of a variety of input and output devices at numerous remote stations. Message sorting and switching systems.

Stromberg Time Corp., Main & Elm Sts., Thomaston, Conn. Time recording equipment. Research includes work on time equipment designed to produce machine-decipherable records.

Systematics, Inc., 60 E. 42 St., New York 17. Intercoupling equipment to connect various types of accounting machines, adding machines, and billing machines to key punches and punched tape equipment for automatic production of common language records. Tape to card converting equipment. Keyboard Input Device reads punched tape or edge-punched cards and prints out results through an accounting machine.

Technitrol Engineering Co., 1952 E. Allegheny Ave., Philadelphia 34. Components for assembly on a "modular" basis to make large-scale electronic computer systems. Components include accessory equipment such as power supply and air conditioning units.

Telecomputing Corp., 12838 Saticoy St., North Hollywood, Calif. Point O' Sale Recorders for reading prepunched merchandise tags and converting data into punched paper tape, with facilities for adding supplementary data at time of sale. Tape-to-card converting equipment.

Teleprinter Corp., 26 Park Place, Paramus, N. J. Mite teletypewriter equipment of unusually small size.

The Teleregister Corp., 445 Fairfield Ave., Stamford, Conn. Specialized electronic equipment, including automatic reservations systems for transportation companies, display boards for showing stock market readings, for use by investment houses, etc.

Teletype Corp., 1400 Wrightwood Ave., Chicago 14. Complete line of communications equipment usable for data transmission, including teletypewriters, tape perforators, tape reperforators, tape printers, page printers, message relay equipment, etc.

Typatape, Inc., 60 E. 42 St., New York 17. Typatape Recorders, for providing a completely mechanical link by which existing business machines can print common language codes on a paper tape. Typatape Converters, to read the tape and punch cards from them.

Underwood Corp., 1 Park Ave., New York 16. Dataflo line of equipment for processing data in common language form; it can originate punched tape data, or can use data from business machines producing punched paper tape records. Dataflo equipment includes master and slave typewriters, tape and card readers and punches, totalizers and programming units. Elecom 50 is small electronic accounting machine, priced near $25,000. Elecom 125 is a medium-priced (about $350,000) electronic data processing system. Model 100 digital electronic computer is desk size, costs about $30,000.

Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18. Electric adding and multiplying (Digit-Matic) machines which can read uncoded decimals, or (through "translators") can be actuated by common language inputs; used to list or to list and perform arithmetical functions. Sales Register and Analysis System uses tape-punching adding machine or cash register to record sales at the point of sale and a centrally located analyzing unit operated by tape.

Western Electric Co., Inc., 195 Broadway, New York 7. This company manufactures equipment for American Telephone & Telegraph Co., listed elsewhere. *(SEE ALSO: Teletype Corp., a Western Electric subsidiary.)*

The Western Union Telegraph Co., 60 Hudson St., New York 13. Complete wire communications facilities, including circuits, available for use in IDP. Equipment includes sending and receiving teleprinters, tape perforators, message relaying, sorting, and switching equipment, facsimile equipment, etc.

IDP Accessories and Services

American Lithofold Corp., 53 W. Jackson Blvd., Chicago. Lithoset units and Lithostrip continuous forms with "built-in" pockets which can carry punched tape for storage and traveling with the forms to which they are related.

Cycle Equipment Co., 17480 Shelburne Way, Los Gatos, Calif. Tape Minder equipment for handling punched paper tapes.

Diebold, Inc., 2011 Mulberry Rd., Canton 2, Ohio. Storage equipment for IDP common language media.

Dresser Products, Inc., 152 Wheeler Ave., Providence 5. Winding and folding equipment for punched paper tapes. Also tape searching units, binder pockets, storage boxes, etc.

Monarch Metal Products, Inc., MacArthur Ave., New Windsor, N. Y. Housing and handling equipment for magnetic tape and tab cards.

Moore Business Forms, Inc., Niagara Falls, N. Y. Forms and form handling equipment used in automated systems together with research facilities for forms development.

Ray Myers Corp., 204 Washington Ave., Endicott, N. Y. Files and handling equipment for punched cards, magnetic tape, and other data processing accessories.

The Shaw Walker Co., Muskegon Mich. Tape storage equipment.

The Standard Register Co., Campbell & Albany Sts., Dayton 1, Ohio. Facilities for designing and testing IDP forms and systems.

Systems Sales Co., 13 Broad St., Binghamton, N. Y. Storage and sorting equipment for tab cards. Electronic computer accessories.

Tab Products Co., 995 Market St., San Francisco 3. Storage equipment and portable reel racks for magnetic tapes. Tab card files, control panel cabinets, and other tab card accessories.

Uarco, Inc., 141 Jackson Blvd., Chicago 4. Forms for use with IDP, with testing facilities and systems analysis services.

Visirecord, Inc., Copiague, L. I., N.Y. Storage equipment for punched paper tapes and edge-punched code records. Forms available include "vertical-visible" records which may have codes punched into an edge, other records with pockets for storage of tapes, and panels for tape storage.

Wheeldex & Simpla Products, Inc., 40 Bank St., White Plains, N. Y. Equipment for storing punched paper tapes, either alone or in combination with their associated records.

Whiteford Laboratory, 420 Market St., San Francisco 11. Servo-mechanisms (chiefly winders and unwinders) for

punched paper tape of various widths.

The Wright Line, Inc., 160 Gold Star Blvd., Worcester 6, Mass. Tab card accessories and other equipment.

(See also the section on adding and calculating machines)

Intercommunications Equipment

INFORMATION is obviously of no value unless it is used to inform. This means that it must be got from its source to the user. The flow of information, of course, is as essential to the work of an office as the flow of blood is to the body. In fact the effectiveness of information flow is a basic measure of the effectiveness of the office itself.

Often it is useful to be able to transmit information instantaneously. The time-saving features of telephone communication make this point clear. But the advantages offered by the telephone are not limited to formal installations. Some of the other possibilities are explored below.

Intercommunications equipment, as treated in this section, deals with equipment intended to make possible instantaneous, or nearly instantaneous transmission of information within a company. It is equipment intended to facilitate both the handling of emergencies and the controlling of larger operations, through the rapid exchange of information.

Most of the equipment considered is used to relay the human voice. However, there are certain types of equipment which permit high-speed communications without actually transmitting the voice, and these too must be mentioned.

Among these are code paging systems and other systems by which information is transmitted instantaneously through the agency of light or sound signals, and certain specialized equipment by which written material may be relayed instantaneously. Also included are some types of conveyor and pneumatic tube systems, which, though not intercommunications equipment in the limited sense, can make valuable contributions to the rapid flow of information within an office.

Almost all of this equipment is electrical in nature. It thus requires some form of channel by which electrical signals may be sent back and forth between stations. Since the type of connecting system has a great bearing on the type of work the equipment can handle, the equipment will be classified here under the following categories:

(1) *Direct-line equipment,* which requires the installation of direct wire connections between each pair of units which are to intercommunicate.

(2) *Switchboard-type equipment,* which calls for the interconnection of individual stations with a switchboard, which in turn can make the connections between stations. Some switchboards operate automatically. Others require the services of an operator.

(3) *"Wireless" equipment,* which is not actually wireless, but which uses the wiring already installed in a building to provide outlets for electrical lighting and equipment of moderate power requirements.

(4) *Radio-type equipment,* which depends on the transmission of electrical impulses through the air in the manner of a radio.

Small systems can use direct wiring

Direct-line equipment is intended primarily for installations of moderate size. At its smallest, a direct-line system could have two stations. As the number of stations in the system increases, the number of direct wire connections required increases at a faster rate. Thus, while one such interconnection is required between a single pair of stations, three are needed for three stations, twenty-one for seven, and so on in increasing proportion.

Consequently, it is not usually considered feasible to use direct-line equipment in large installations. Few standard stations of this type can reach more than 24 other stations. This does not mean that such a system is limited to 25 stations, even though no one unit may be able to reach more than 24 others, for each station may be connected to stations which cannot be reached by each other. Such an arrangement, of course, would require relaying of messages between such stations, using as a relay point a station common to both.

In larger systems, therefore, connections are usually made through a switchboard. This arrangement very much reduces—proportionately—the wiring required. Switchboards can handle, in some instances, a thousand or more individual stations, any of which can be interconnected.

Switchboards may be automatic. That is, the connections are selected automatically by dialing a number. Such a system is actually a completely private internal telephone system.

On the other hand, the switchboard may be of a design which requires that it be monitored by an operator. While many such installations are available from the local telephone company—and indeed many telephone installations are used regularly for intercommunications purposes—this type of equipment is also available privately.

"Wireless" systems give flexibility

"Wireless" equipment offers the maximum in economy and flexibility, for it uses wiring already installed. Units plug individually into conventional electrical outlets. They may be unplugged, moved to another location, and plugged into another outlet. This feature gives them flexibility, and, since the units are customarily about the size of small portable radios, considerable usefulness where portability is required. When used to reach men who must move from place to place within an office or building, the number of units required is reduced.

This arrangement means that any unit operating on a given frequency can listen to any other on the same frequency. Wireless units, thus, do not offer privacy. It is possible, however, to set different units on different frequencies, a fact which allows units on one frequency to operate without interference from units set to another frequency. There are limits, however, to the locations in which wireless units can be used. They must, for example, be served by the same power transformer.

The principles of radio are not used in the office except for specialized purposes. To be effective, some sort of transmitting antenna must be installed in the area in which the system is to operate. To date, radio-type equipment has been used largely for paging, with messages addressed to tiny portable receivers which may be carried by the user or, in some cases, attached to his lapel.

Within each of these four categories a wide range of equipment is offered. Some units resemble telephones, some take the shape of cabinets. These may be mounted on the tops or sides of desks, or on walls. Some are highly decorative, for use in executive offices; others are designed for purely functional purposes.

Many different types of features are available if desired, although few are found on wireless models. Among them are automatic busy signal, automatic ringing, "locking out" of incoming calls when a station is busy, "executive right-of-way," features to permit calls to a busy station to be put through automatically when the station becomes available, and accessories such as handsets and controls which permit units to be used without actually touching them. Many systems are equipped to allow interconnection with paging facilities and public address systems; in some cases, portable radio systems may also be connected. A number of systems are designed for use with dictating facilities, creating network dictation systems.

Paging facilities may rely on voice calls or on visual or aural code signals. Among these are flashing lights, indicator lights, buzzers, chimes, and bells. Codes usually consist of one or two numerals, which identify the individual called. Sometimes a supplementary code may be used to indicate the purpose for which the call is made—as to inform an individual of an incoming telephone call, or to summon him to the boss' office.

Codes may be sent manually, but in many systems a code number need only be selected, and it is then transmitted automatically.

Some units transmit written material

Special equipment is also available. For example, transmission equipment operating on the facsimile principle can be used to send written or printed messages by wire to remote units. Some equipment provides for the simultaneous duplication at remote stations of handwritten messages written at the transmitting station by means of an electrified stylus. These methods provide written records of messages sent and received.

Also of use are conveyor belt and pneumatic tube systems. Although some of these fell into disuse as other forms of intercommunications were developed, they have come back into popularity in some quarters because they provide a rapid means of transmitting written messages and small objects. Several of *Office Management's* "Office of the Year" winners, for example, have made use of pneumatic tube systems. In at least one case, the installation permits centralized filing in which files can be sent throughout the company as required; the equipment has made possible a system which had previously been regarded as impractical. Conveyor systems are being used increasingly for mail distribution.

What intercom systems do for quick voice communications, pneumatic tube systems can do for quick mail handling. Such installations, like this one at Mutual Benefit Life Insurance Company, can both facilitate the handling of mail and speed access to reference material filed centrally. These systems are growing in popularity.

Some equipment requires sorting and redirecting of mail at a central control station. Automatic rerouting of tube carriers is now possible, with destinations set on the carrier at the time of sending.

Intercommunications systems offer certain considerable advantages to companies that have need of their services.

First, of course, is speed of communications. They make possible spoken communication, including conferences, without requiring individuals to leave their desks. Second, they take the load off existing telephone systems; calls from outside the company are not blocked by internal traffic, and answers to incoming calls can be facilitated by quick calls within the company via intercom when the outside calls require information from elsewhere in the company. Third, new systems applications become possible; for example, timekeeping operations can be handled by intercom, with the worker merely calling in as he begins and ends an operation, so that a trained recorder can keep track of the time information centrally—and with less chance of error than when it must be recorded by the individual worker.

The Manufacturers

The following list covers the principal manufacturers of intercommunications equipment of various types.

The code symbols in the list are as follows:

C—Conveyor systems.

EH—Systems employing a form of "electronic handwriting."

F—Equipment of the facsimile type.

MI—Miscellaneous.

NI — No information available at press time on current products.

P—Pneumatic tube systems.

PD—Paging equipment of the direct wire type.

PMI—Paging equipment, miscellaneous.

PR—Paging equipment using radio.

PSA — Paging equipment using an automatic switchboard.

PSM — Paging equipment using a monitored switchboard.

PW—Paging equipment of the "wireless" type.

T—Teletypewriter equipment.

VD—Voice equipment of the direct wire type.

VMI—Voice equipment, miscellaneous.

VR—Voice equipment using radio.

VSA — Voice equipment using an automatic switchboard.

VSM — Voice equipment using a monitored switchboard.

VW—Voice equipment of the "wireless" type.

Air Associates, Inc. SEE: Electronic Communications, Inc.

Aircall, Inc., 224 E. 38 St., New York. (PR—NI)

Airmatic Systems Corp. (an associate of International Telephone & Telegraph Corp.), 378 Bergen Blvd., Fairview, N. J. (P)

Allied Radio Corp., 100 N. Western Ave., Chicago 80. (PD)

American Development Electronics Co., 210 Central Ave., Newark 3, N. J. (VD)

American Mica Radio Corp., Manasquan, N. J. (NI)

American Telephone & Telegraph

Co., 32 Avenue of the Americas, New York. (T; VSM)

Auth Electric Co., 34-20 45 St., Long Island City 1, N. Y. (PD; PR; PSM; VD; VSM)

Automatic Electric Sales Corp., Northlake, Ill. (PR; PSA; VR; VSA)

Bell Sound Systems, Inc., 555 Marion Rd., Columbus 7, Ohio. (VD)

Bliss Electronic Corp., Sussex, N. J. (VSA)

David Bogen Co., Inc., P. O. Box 500, Paramus, N. J. (PD; PSM; VD; VSM; VW)

Cambridge Co., 2561 N. Clark St., Chicago 14 (PD; VD)

Connecticut Telephone & Electric Corp., 70 Britannia St., Meriden, Conn. (PD; PSA; VD; VSA)

S. H. Couch Co., Inc., 3 Arlington St., N. Quincy 71, Mass. (PD; PSA; VD; VSA)

Dage Television Div., Thompson Products, Inc., W. Tenth St., Michigan City, Ind. (MI—Closed circuit television)

Dictograph Products, Inc., 95-25 149 St., Jamaica 35, N. Y. (PR; VD; VR)

DuKane Corp., 103 N. Eleventh Ave., St. Charles, Ill. (PD; PR; PSA; VD; VR; VSA)

Edwards Co., Inc., 90 Connecticut Ave., Norwalk, Conn. (PSA; VD)

Electronic Communications, Inc., Air Associates Div., Teterboro, N. J. (F)

Electro-Vox Intercom Corp., 3 E. 54 St., New York 22. (PD; PSA; VD; VSA)

Executone, Inc., 415 Lexington Ave., New York 17. (PD; VD)

Fanon Electric Co., Inc., 98 Berriman St., Brooklyn 8, N. Y. (PD; PSA; PSM; PW; VD; VSA; VSM; VW)

Federal Telephone & Radio Co., 100 Kingsland Rd., Clifton, N. J. (PR; PSA; VR; VSA)

Feiler Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill. (PW; VW)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. (T)

The Goodyear Tire and Rubber Co., 1144 E. Market St., Akron 16, Ohio. (MI—Conveyor belting)

The Grover Co., 25525 W. Eight Mile Rd., Detroit 19. (P)

International Business Machines Corp., 590 Madison Ave., New York 22. (PW)

International Standard Trading Corp. (an associate of International Telephone & Telegraph Co.), 22 Thames St., New York 6. (T)

International Telephone & Telegraph Corp. SEE: Airmatic Systems Corp. SEE ALSO: International Standard Trading Corp.

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38. (EH; PSA; VSA)

Kleinschmidt, Inc., County Line Rd., Deerfield, Ill. (T)

L & O Research & Development Corp., 134 N. Wayne Ave., Wayne, Pa. (F)

Lamson Corp., 10 Lamson St., Syracuse 1, N. Y. (C; P)

Line Electric Co., 1407 McCarter Highway, Newark 4, N. J. (PSM)

J. M. Loge, Sound Engineers, 2171 W. Washington Blvd., Los Angeles 18. (PD; VD)

Mohawk Business Machines Corp., 944 Halsey St., Brooklyn 33, N. Y. (MI—Recording unit for transmitting paging calls)

Motorola, Inc., 4501 Augusta Blvd., Chicago 51. (PR; VR)

National Inter-Communicating Systems, Inc., 1130 N. Milwaukee Ave., Chicago 22. (PD—NI; VD—NI)

North Electric Co., 553 S. Market St., Galion, Ohio. (PD; PSA; PSM; VD; VSA; VSM)

Philco Corp., Tioga & C Sts., Philadelphia 34. (PR)

Radio Corp. of America, Front & Cooper Sts., Camden, N. J. (PD; PSA; VD; VSA)

The Rapids-Standard Co., Inc., Rapistan Bldg., Grand Rapids 2, Mich. (C—NI)

Rauland-Borg Corp., 3535 W. Addison St., Chicago 18. (PD; VD)

Servus-Fone Div., Motiograph, Inc., 4441 W. Lake St., Chicago 24. (PSM; VSM)

Mark Simpson Mfg. Co., Inc., 32-28 49 St., Long Island City 3, N. Y. (PD; PW; VD; VW)

Smith-Corona Inc., 701 E. Washington St., Syracuse 1, N. Y. (T)

Wm. M. Smith Co., 20 Ferguson Ave., Broomall, Pa. (PD; VD)

Stenafax Div., Times Facsimile Corp., 540 W. 58 St., New York 19. (F)

Stewart-Warner Electronics, 1300 N. Kostner Ave., Chicago 51. (F)

Stow & Davis Furniture Co., 25 Summer Ave., N.W., Grand Rapids 2, Mich. (MI—Special executive office communications and control systems)

Stromberg-Carlson Co., General Dynamics Corp., Special Products Div., 1700 University Ave., Rochester 10, N. Y. (PSA; VSA)

Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago 23. (PD; PW; VD; VW)

TelAutograph Corp., 8700 Bellanca Ave., Los Angeles 45. (EH)

Telecom, Inc., 1019 Admiral Blvd., Kansas City 6, Mo. (PD; PSA; PSM; VD; VSA; VSM)

Tele-Norm Corp., 55 W. 42 St., New York 36. (PD; PSA; VD; VSA)

Teleprinter Corp., 26 Park Pl., Paramus, N. J. (T)

The Teleregister Corp., 445 Fairfield Ave., Stamford, Conn. (MI — Special electronic reservations systems and display equipment)

Teletype Corp., 4100 Wrightwood Ave., Chicago 39. (T)

Terry-Phone, Inc., Sixth & Lucknow Lane, Harrisburg, Pa. (PD; PR; VD; VR)

Times Facsimile Corp. SEE: Stenafax Div.

Transelectric Mfg. Co., 53 Hopewell Rd., Oxford, Pa. (VD)

Vocaline Co. of America, Inc., 100 Bristol Bldg., Old Saybrook, Conn. (PW; VW)

Webster Electric Co., 1900 Clark St., Racine, Wis. (PD; PW; VD; VW)

The Western Union Telegraph Co., 60 Hudson St., New York 13. (F; T)

The Wheeler Insulated Wire Co., Inc., Div. of Sperry Rand Corp., 150 E. Aurora St., Waterbury 20, Conn. (VD—Sound powered telephones)

Wheelock Signals, Inc., Long Branch, N. J. (PD)

Mailroom Equipment

THE WORK of the mailroom is basically physical. It deals with letters and packages—items in bulk form—and is less susceptible to the "automated" techniques of the office, which deal primarily with information handling.

Since the office deals primarily with information in one form or another, it is working with things that may be regarded as abstract. In any case, information can be transferred from one type of record to another without losing its basic characteristics. A number, for example, does not change its value because it is encoded as holes in a punched card or tape, or as magnetized spots on a magnetic tape, or as a series of written numerals on a piece of paper.

The office has at its disposal many high-speed systems for handling information, where only the information itself is essential, for it can transfer information from slower systems—such as those in which information is printed or written on paper—to faster ones—such as those of an electronic nature.

But the mailroom deals with the physical aspects of information handling, and specifically with information and goods in a purely physical form—letters, post cards, packages. There is a limit to how fast such items can be handled.

All departments affect mailroom

The work of the mailroom is reduced, usually, only as a result of changes in some other department. If a utilities company, for example, decides to eliminate typed statements enclosed in envelopes and sent out to its customers, and instead turns to the punched card post card for its billing, the mailroom is spared an inserting operation, and, in many cases, both a folding and a collating operation also.

So the mailroom has relatively few ways in which it can speed its operations, at least to an extent that matches the progress possible in data handling.

Nevertheless, there have been frequent improvements in mailroom machinery and equipment. Some of these improvements take the form of increased mechanical speed, as in speeding up the operating cycle of a folding machine. Others are found in combining several functions so that one machine can carry them out simultaneously or in automatic succession. Thus, while separate folding machines, inserting machines, and postage meters may be very useful if the mailroom system calls for separate machines, it is possible to obtain machines which carry out all three functions automatically. Whether or not this is an advantage depends again on the needs of the particular system.

The obvious gain in such systematization is in eliminating much of the material handling between machines. Only two loading stations are needed, and one unloading station, whereas four loading and three unloading points had been used.

On the other hand, this kind of systematizing may bring with it a loss in flexibility—and certainly of portability, if that is required. Thus it is the needs of the system, rather than of the machine, that should govern.

A proper choice of mailroom furniture is also a factor. Some installations may be custom ordered to suit particular requirements. Most installations may be built up from existing components, such as tables, sorting racks, stands, mailbag holders, and the like. Units must naturally be chosen on the basis of such factors as the volume of the mail load, the number of clerks, the availability of working materials within convenient reach of the clerks, and facilities for moving mail in and out. The best arrangements, of course, are those which call for a minimum of motions in terms of the volume of mail to be handled.

Many differing types of equipment may be used in a mailroom. This review is not intended to cover all possibilities. However, certain basic categories are listed. These are:

(1) *Collators.* Collators, of course, may be used in duplicating centers and in areas other than the mailroom. They are grouped here, however, for convenience.

Numerous types of collators may be found. In the simplest form, stacks of pages may be placed in racks or bins and collated by hand. Thus a relatively uncomplicated type of collator may be created by the principle of adding a feeding mechanism to a simple bin or rack design. The feed, usually of the friction type, merely moves the top sheet out of each bin so that it may be gathered by hand. The feed mechanism may be manually operated, or may be electrically powered.

Collators come in many varieties

The arrangement of bins may be considerably varied. In some types of machines, pages are stacked at stations where top sheets may be lifted from the stacks by suction feeds and placed in some type of conveyor system which advances the completed sets and places them in final stacks.

Some collators have the stations arranged vertically. Others use rotating bin-type arrangements around an axis that allows for vertical (or, in some cases, horizontal) rotation. In some of these, the pages are lifted out manually. In others a mechanical feed is used.

Accessories may be used with some machines to give them added versatility. Among these are facilities for folding, stitching, stapling, and offsetting each set. Counters are often provided, and many collators are equipped with safety devices that stop the machine should a page fail to load, should double-loading occur, or should a blank page turn up in a stack.

Also included, since they can be used for the same purpose, are certain types of gathering racks which serve merely to hold the various stacks while they are gathered manually.

(2) *Envelope Opening and Sealing Machines.* The principle on which letter opening machines operate is that of trimming off a fine edge from one of the long sides of an envelope. The simplest of these are operated manually. Electric models, however, are offered, and some of these are equipped to feed the mail automatically into the unit and to stack it after it has been opened. Sealing machines merely do a mechanical job of "licking the flap."

Machines speed folding and inserting

(3) *Folding and Inserting Equipment.* While folding and inserting are two quite distinct operations, the equipment is considered here in one category because many machines accomplish both functions. Even relatively simple folding machines can make a variety of standard folds; the folds desired are selected by making easy adjustments on the machine. Inserting machines range from models which make insertions of single items into envelopes to more complicated machines which can gather and insert several enclosures. Some machines will fold the enclosures, insert them, print postage on the envelopes, and stack the finished mail, all in one automatic sequence.

(4) *Postage Metering Machines.* This type of machine prints postage directly onto envelopes or onto gummed labels or strips which can be affixed to packages, envelopes, and other mailing pieces.

Since printed postage has monetary value, it is controlled by the Government under strict regulations. The meter may be set only at a post office. The amount of postage to be purchased is paid for in advance, and a corresponding value is set into the machine. The meter is locked. As postage is printed, its value is subtracted from the amount set in the machine.

Obviously, the equipment must be designed so that the metering mechanism can be transported to the post office. If the machine is small, the entire unit may be moved. In larger machines, the metering unit is detachable.

Postage metering machines print other information than the value of the

postage itself. They provide a dated postmark and are often used to print a postmark advertisement as well.

Some machines are small and are hand operated. Some are electrically operated. Hand and automatic feeds are available.

In some cases, metering facilities may be incorporated in large mailing machines capable of folding, inserting, and stacking the finished mail.

(5) *Postage Stamp Affixing Machines.* Machines of this type are usually small, and are intended for the small office which is not prepared to use postage metering machines. However, postage stamp affixing facilities may be included as a feature on large labeling machines equipped to handle material ranging in size from post cards to catalogs.

(6) *Postal Scales.* Scales for letters and parcel post are offered in many designs and qualities. Some scales use spring arrangements, while others use the principle of gravity to measure weight through a system of balancing.

Scale indicators suit varying needs

Indicators may be calibrated to show simple weights or postage requirements for only a single mail rate. The more informative types show postage required in various mail classes for various zones.

The indicator and chart may be arranged in a variety of ways. One type of scale has a fan-shaped chart with an indicator that is carried back and forth across it. Others have the chart wrapped about a rotating drum, with a fixed hairline indicator. A feature used on some models is the so-called "gunsight" indicator, employed to disclose only one portion of the scale at a time; the user may, for example, make use of the first-class scale without any danger that he may, through error, read a parcel post scale.

(7) *Mailroom Furniture.* This is a self-explanatory classification. It includes sorting bins and racks, tables, and stands—in short, any furniture that may help the mailroom to carry out its duties.

(8) *Miscellaneous.* It is impossible to list every type of equipment that conceivably could be used in the mailroom. However, the list below includes a variety of items, such as mailbags and mailbag holders, tape dispensers, mail carts, labeling machines, counting machines, and so on. It is by no means an exhaustive list, owing to the difficulty of making such a list complete and finding space for it in an issue of this size.

The Manufacturers

The list below is devoted to manufacturers of the principal types of mailroom equipment, plus some equipment which, while not always used in the mailroom, may properly be grouped here. Because of space restrictions, the list is limited to basic categories of equipment, which are indicated by the following codes:

C—Collators.
E—Electric machines.
EOS—Envelope opening and sealing machines.
F—Furniture other than sorting racks and bins.
FI—Folding and/or inserting equipment.
M—Manual machines.
MI—Miscellaneous.
NI — No information available at press time on current products.
PM—Postage metering machines.
PS—Postal scales.
SA—Postage stamp affixing machines.
SD—Sorting bins and devices of use in the mailroom.

Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 17. (C—E)

Amberg File & Index Co., 1627 E. Duane Blvd., Kankakee, Ill. (SD)

Associated Industrial Designers, 3726 Effingham Pl., Los Angeles 27. (C—M; SD)

B-T Co., Inc., 121 N. Broadway, Milwaukee 2. (PS)

Barwel Mfg. Co., Inc., 95 Commercial St., Brooklyn 22, N. Y. (MI—Mail bags)

Bell & Howell Phillipsburg Co., Box 186, Phillipsburg, N. J. (FI—E; PM—E)

Bemis Bro. Bag Co., 408 Pine St., St. Louis 2. (MI—Mail bags)

Better Packages, Inc., 252 Canal St., Shelton, Conn. (EOS—M; MI—Tape dispensers, label and envelope moisteners)

The Bircher Co., Inc., 192 Mill St., Rochester 4, N. Y. (EOS—E, M)

Bohn Duplicator Corp., 444 Fourth Ave., New York 16. (EOS—M)

The Borg-Erickson Corp., 1133 N. Kilbourn Ave., Chicago 31. (PS)

Boyle Leather Goods Co., Inc., 36 E. 31 St., New York. (MI—Mail bags)

Can-Pro Corp., 19 E. McWilliams St., Fond du Lac, Wis. (MI—Mail bags and carts; SD)

W. A. Charnstrom Co., 422 S. Seventh St., Minneapolis 15. (MI—Mail bag holders)

John Chatillon & Sons, 85 Cliff St., New York 7. (PS)

Cheshire, Inc., 1644 N. Honore St., Chicago 22, Ill. (EOS; MI—Labeling machines; SA — Accessory on large machines)

Chesley Industries, Inc., 24777 Telegraph Rd., Detroit 41. (MI—Mail carts)

Collamatic Corp., Wayne, N. J. (C-E)

Commercial Controls Corp., Subsidiary of Friden, Inc. SEE: Friden, Inc.

Cooks' Inc., 207 Lakeview Ave., Blackwood, N. J. (SD)

Corbin Wood Products Div., The American Hardware Corp., P. O. Box 1324, New Britain, Conn. (F; SD)

Cummington Corp., 718 Beacon St., Boston 15. (C—E; FI—E; PS)

Cummins-Chicago Corp., 4740 Ravenswood Ave., Chicago 40. (MI—Mail marking equipment)

The Darling Payne Corp., 82 Beekman St., New York 38. (MI—Counting machines)

Davidson Corp., 29 Ryerson St., Brooklyn 5, N. Y. (FI—E)

Dependable Mfg. Co., 2407 Fort Crook Rd., Bellevue, Neb. (F—Stools, stands, etc.)

Derby Sealers, Inc., 100 Seymour Ave., Derby, Conn. (MI—Tape dispensers)

Detecto Scales, Inc., 540 Park Ave., Brooklyn 5, N. Y. (PS)

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. (F; FI—E)

The Dick Mailer Co., 137 W. Tupper St., Buffalo 1, N. Y. (MI—Address label machines)

Didde-Glaser, Inc., 50 Highway & W. Twelfth Ave., Emporia, Kans. (C—E)

Equipto, Div. of Aurora Equipment Co., 422 Cleveland, Aurora, Ill. (F—SD)

Evans Specialty Co., Inc., 1800 E. Grace St., Richmond 23, Va. (C—M)

The Federal Equipment Co., P. O. Box 446, Carlisle, Pa. (F; MI—Mail bags and racks; SD)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. (EOS—E; MI—Mail bags and racks; PS; SA—E, M; SD)

J. L. Galef & Son, Inc., 85 Chambers St., New York. (PS—NI)

A. Galewski & Sons, Inc., 119 W. 25 St., New York 1. (MI—Mail bags)

The General Fireproofing Co., 413 Dennick Ave., Youngstown, Ohio. (SD)

General Photo Products Co., Inc., 15

Summit Ave., Chatham, N. J. (C—M, for photocopying work)

Glue-Fast Equipment Co., Inc., 9-11 White St., New York. (MI—Tape dispensers, labeling machines)

Graphic Arts Development Co., 3812 W. 150 St., Cleveland 11. (C—NI)

Hamilton Specialties, Inc., 5 Watson St., Boston 18. (PS)

Hanson Scale Co., P. O. Box 267, Northbrook, Ill. (PS)

Harris-Seybold Co., 4510 E. 71 St., Cleveland 5. (C—E)

Hartman Metal Fabricators, Inc., Markol Div., 133 Murray St., Rochester, N. Y. (F; MI—traveling racks)

Haskell, Inc., 303 E. Carson St., Pittsburgh 19. (F)

S. A. Hirsh Mfg. Co., 8051 Central Park Ave., Skokie, Ill. (MI—Shelving)

The Howe Scale Co., 2947 Scale Ave., Rutland, Vt. (PS)

A. C. Hummel Co., 5349 Kennedy Ave., Cincinnati 13. (MI—Label moisteners, tape dispensers)

I. D. L. Mfg. & Sales Corp., 132-138 Lafayette St., New York 13. (PS)

Ideal Stencil Machine Co., 102 Iowa Ave., Belleville, Ind. (MI—Tape dispensers)

Industrial Molded Products Co., Inc., 609 New York Bldg., St. Paul 1. (EOS—NI)

Inserting & Mailing Machine Co. SEE: Bell & Howell Phillipsburg Co.

Insert-O-Matic Corp., 1707 N. 25 Ave., Melrose Park, Ill. (FI—NI)

Interior Steel Equipment Co., 2352 E. 69 St., Cleveland 4. (F—SD)

Johnson Research Corp., Bethpage, L. I., N. Y. (C—NI)

Ketcham & McDougall, Inc., 465 Eagle Rock Ave., Roseland, N. J. (MI—Tape dispensers)

Lansdale Products Corp., Box 568, Lansdale, Pa. (EOS—E; FI—E. One machine serves both functions.)

Le Febure Corp., 716 Oakland Rd., N. E., Cedar Rapids, Iowa. (F; SD)

W. C. Leute, 54 Dey St., New York 7. (MI—Mail bags)

The Macey Co., subsidiary of Harris-Intertype Corp., 5350 W. 130 St., Cleveland 30. (C—E; FI)

Arnold MacKenzie, 3133 Overbrook Drive, Minneapolis. (EOS—NI)

Mail-O-Matic Corp., The Beverly Hilton, Beverly Hills, Calif. (FI—E, M)

Markol Div. SEE: Hartman Metal Fabricators, Inc.

Marsh Stencil Machine Co., 82-C Marsh Bldg., Belleville, Ill. (MI—Tape dispensers)

Martin-Yale, Inc., 2100 W. Fulton St. Chicago 12. (EOS—E; FI—E)

Master Folder Co., 3000 Woodhill Rd., Cleveland. (FI—NI)

The Mayfair Co., 315 N. Desplaines St., Chicago 6. (PS—NI)

J. Curry Mendes Corp., 1 Curry Lane, Canton, Mass. (C—E, M)

Metal Specialties Mfg. Co., 1975 N. Cornell Ave., Melrose Park, Ill. (MI—Tape dispensers)

Nashua Corp., 44 Franklin St., Nashua, N. H. (MI—Tape dispensers)

The National Cash Register Co., Main & K Sts., Dayton 9, Ohio. (PM—E)

Nu-Craft Products Co., 321-327 Clarkson Ave., Brooklyn 26, N. Y. (SD)

Office Accessories Corp., 660 S. Fair Oaks Ave., Pasadena 2, Calif. (EOS—M; MI—Tape dispensers; SA—NI)

Pelouze Mfg. Co., 1218 Chicago Ave., Evanston, Ill. (PS)

Permacel Tape Corp., New Brunswick, N. J. (MI—Tape dispensers)

Pitney-Bowes, Inc., Walnut & Pacific Sts., Stamford, Conn. (C—E; EOS—E; M; F; FI—E; MI—Counting and imprinting machines, mail bag racks; PM—E; M; PS; SD)

Pres-to-Line Corp. of America, 2339 Cotner Ave., Los Angeles 64. (EOS—M)

Printing Devices, Inc., 1705 N. 25 Ave., Melrose Park, Ill. (FI—NI)

The Print-O-Matic Co., Inc., 724 W. Washington Blvd., Chicago 6. (FI—E; M)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. (C—M)

Rex-Rotary Distributing Corp., 387 Fourth Ave., New York 16. (FI—E, M)

Salsbury Corp., 1161 E. Florence Ave., Los Angeles 1. (MI—Tape dispensers)

Seal-O-Matic Dispenser Corp., 169 Murray St., Newark 5, N. J. (MI—Label and envelope moisteners, tape dispensers, and other mailroom items.

Sherman Manson, Inc., Celina Rd., St. Mary's, Ohio. (F—SD)

The SorterGraf Co., 4044 W. Jefferson Ave., Detroit 9. (SD)

Speedo-Sort Co., 4016 N. Harding Ave., Chicago 18. (SD)

William W. Stanley Co., Inc., 401 Broadway, New York 13. (MI—Mail bags)

Stromberg Time Corp., Thomaston, Conn. (MI—Time stamps)

Syntron Co., 626 Lexington Ave., Homer City, Pa. (MI—Joggers)

Tape, Inc., 1706 S. Broadway, Green Bay, Wis. (MI—Tape dispensers)

Thomas Collators, Inc., 50 Church St., New York 7. (C—E, M)

The Toledo Metal Furniture Co., 1100-1200 Hastings St., Toledo 7, Ohio. (F; MI—Vault trucks)

Toledo Scale Co., 1083 Telegraph Rd., Toledo 1, Ohio. (PS)

Triner Scale & Mfg. Co., 2714 W. 21 St., Chicago 8. (PS)

U. S. Luggage & Leather Products Co., 29 W. 34 St., New York 1. (MI—Mail bags)

The Victor Safe & Equipment Co., Inc., 315 Fourth Ave., New York 10. (SD)

The Wadsworth Mfg. Co., 930 Broad St., Wadsworth, Ohio. (C—E, M)

Werner Canvas Products Co., 110 New York Ave., Brooklyn 16, N. Y. (MI—Mail bags)

Wilson Jones Co., 209 S. Jefferson St., Chicago 6. (EOS—M)

Chauncey Wing's Sons, 78 Pierce St., Greenfield, Mass. (MI—Label affixing machines)

Yawman & Erbe Mfg. Co., 1099 Jay St., Rochester 3, N. Y. (F; SD)

Microfilm Equipment

INVENTIONS sometimes have a way of outgrowing their inventor. The microfilm camera is an example. It was developed originally to give banks a record of checks passing through their hands. But in addition to its original uses, it is now offering special benefits through "procedural" or "systems" techniques.

Long considered a device for condensing the volume of space occupied by records, or else a means for providing duplicate security copies of important documents, microfilming equipment has in recent years been put to work in many accounting operations for the purpose of saving time and labor.

These advantages derive from four basic facts about the microfilm camera: (1) It is the fastest of all copying devices used in the office, making exact copies at speeds of thousands an hour. (2) It is the least expensive office device for making exact individual copies, measured by its operating costs, the film being much less expensive per copy than any other type of copying medium. (3) Microfilm images are the smallest of all records which must be read in the

office. (4) Microfilming techniques permit records to be maintained either sequentially or individually, owing to the development of many means for "unitizing" microimages.

These virtues have endless possible applications. A typical example of a systems application is the familiar one of microfilming individual sales slips, such as those that might be used in a department store to record charge purchases. The slips themselves may be sent to the customer in lieu of an itemized statement; the customer receives a statement showing only a summary of what he owes, together with the slips that identify the purchases, while the store, having filmed the original sales slips, can verify any charges made.

Such a procedure, often used in such organizations as telephone companies (to record long distance call slips) and clubs (to list meals and services), saves billing time (since much descriptive billing is eliminated), reduces the volume of records maintained in the company offices, and assures the customer that his bill is correctly computed.

Indexing is key to convenience

One of the problems encountered in establishing a routine for microfilm records is how to index the material so it may be located quickly.

It must be remembered that microfilm records may be kept in several ways: (1) as images on a roll of film, in the sequence in which they were filmed, (2) as "unitized" images, with single frames or short strips of several frames mounted in cards and filed in any desired order, and (3) as opaque records which may be actually printed onto a card so that a complete file on one subject can be filed together; some publications are issued in this form.

Where microfilm is unitized or offered in unitized opaque form, records may be filed according to indexing methods that may exactly parallel those used in filing original documents. One additional advantage, however, is that the filmed images may be inserted in tabulating cards, which allows all of the sorting and tabulating capabilities of punched card equipment to be added to the record system.

The only new indexing problems that arise when records are microfilmed occur when the records are to remain on the original roll on which they were recorded.

The principles, however, are easy to master. In general, they closely parallel standard filing methods. Most manufacturers provide clear advice on this matter.

Thus, with proper care, indexing of microfilm represents no great problems. Obviously, documents in film form must be usable in some predetermined sequence, such as numerical, alphabetical, or chronological. While the film may be cut, rearranged, and spliced, its legal value may suffer as a result, at least if the sequence of recording is of importance. Otherwise, microfilm is considered legal evidence of the documents recorded, and if the sequence does not matter, rearrangement or unitizing of the film may allow for special advantages in the filing system.

Microfilm cameras are of two basic types: flow cameras and transport (often called "planetary") cameras. The flow type is the design commonly used to record documents in the office. It gets its name from the fact that records are photographed while both film and records are moving through the camera. The speeds of the film and of the record are synchronized so that the leading edge of the document is filmed as it passes a certain point in the machine, and as each successive portion of it passes that point, it is recorded on the film. This method is in contrast to the familiar method used in personal hand cameras in which the entire scene is photographed at once. The flow method is extremely fast, and can accept thousands of documents an hour. It cannot accept pages from bound material unless they are removed.

The transport method more closely resembles the method used in the ordinary camera. The entire record is photographed at once. It is a much slower technique, since each item must be placed before the camera individually and removed after the photograph has been taken. It is not adapted to rapid feeding of records, and it is used primarily for recording large documents, such as engineering drawings and blueprints. However, large documents can also be recorded by the flow method, since some flow cameras have extremely wide throats. The transport type camera is also used to record bound material.

While some cameras for office use employ 70mm film, these are rare. In general, either 16mm or 35mm film is used. Some cameras can accept either size.

Certain models record one side of a document at a time, with the image occupying the full width of the film.

Other models can record on half the film width as well, the methods being used interchangeably as required. In some machines it is possible to record both sides of a document at once, the images appearing side by side on the film. This method is referred to as "duplex" recording.

To make cameras adjustable to documents of various sizes, it is possible to provide differing reduction ratios. Some models have fixed ratios which cannot be changed, or if changeable, can be altered only at the factory. Others are designed so that the ratios may be changed by changing the lenses. This may be possible by operating a simple mechanism in which the lenses are mounted.

The reduction ratio used should be suitable to the documents being recorded. A large ratio may reduce fine print beyond the point of legibility, while a small ratio may result in wasting film space.

Flow cameras operate at high speeds

Flow cameras may be fed by hand, by the use of an automatic feed, or both. Automatic feeds are most effective in recording documents which are of uniform size, shape, and thickness, and which have clean leading edges — not crumpled, torn, or "dog eared." When it is desired to film material that is not consistent in these respects, it is usually best to have the automatic feed operated by a skilled operator who can feed in items by hand as necessary.

Many flow cameras have special protective features to prevent double loading, loading when there is a failure of lights or of internal mechanisms, and loading when the film has broken or the film supply has been exhausted.

Microfilm readers (viewers) vary also in their features. Some models throw images onto the reverse of a translucent screen. Others use an opaque screen, which may or may not be built into the reader; this technique resembles the method used in home movie or slide projectors.

Various magnification ratios are obtainable, which in many cases are interchangeable. Features available where required include facilities for rotating the projected image (so that documents recorded sidewise because of their shape and size can be read in the normal position), variability of speed

of film advance, and features for making prints from the microfilm images. Readers may be manually or electrically operated. Other models are designed for use with opaque and unitized images.

Some models are offered in which both cameras and readers are combined.

Individual cameras may be as large as a desk or as small as a portable typewriter. Portable machines enable an operator to take a unit into an office to photograph documents he needs and to take the images to his office for further study. Such a capacity may be of help to men engaged in consulting and auditing.

In addition to cameras and readers, equipment used in microfilming may include units for processing the film and preparing it for storage. Also offered are units to make enlarged prints from the microfilm images, together with such other accessories as microfilm filing cabinets, and facilities for dehumidifying the spaces used to store microfilm.

It should be noted that microfilm should not be stored in insulated files, for the reason that such insulation is usually designed to give off moisture in the form of steam when the unit is exposed to fire. The film may be damaged by moisture at temperatures lower than those necessary to ruin it from the direct effects of heat.

The dampness usually found in underground vaults is similarly likely to damage film. It is recommended that microfilm be stored in tin cans with friction lids, the cans being placed above ground in fire-resistant vaults. When film is stored in humidified cabinets, care should be taken to see that an excess of salt (such as sodium dichromate) be maintained in the cabinet in excess of that required to saturate the salt solution and that the cabinets be as airtight as possible. Humidity should be maintained within 40 to 50 per cent of saturation.

The Manufacturers

The following list includes the major manufacturers of microfilm equipment. It also includes suppliers of services used in preparing "unitized" microrecords.

The codes in the list are as follows:

C—Cameras.

MI—Miscellaneous.

NI — No information available at press time on current products.

RF—Readers using roll film.

RO — Readers for opaque microimages.

U—Supplies and services for unitizing microimages.

The American Microfilming Service Co., 44 Laura St., New Haven, Conn. (MI—Filing systems for opaque microimages in unitized form; U)

American Optical Co., Instrument Div., Buffalo 15, N. Y. (RO)

Atlantic Microfilm Corp., 28 Railroad Ave., Pearl River, N. Y. (C; MI—Editing unit for film; RF; RO; U)

Burroughs Corp., 6071 Second Ave., Detroit 32. (C; RF; U)

Copycat Corp., 41 Union Square West, New York 3. (MI—Units to make prints from microfilm)

Diebold, Inc., Flofilm Div., P. O. Box 127, Norwalk, Conn. (C; RF; U)

Documat, Inc., 385 Concord Ave., Belmont, Mass. (C; RF; RO)

Duophoto Corp., 236 Fifth Ave., New York 10. (U—NI)

Eastman Kodak Co., 343 State St., Rochester 4, N. Y. (C; RF; RO; U)

Filmsort Div., Dexter Folder Co., Div. of Miehle-Goss-Dexter, Inc., 50 S. Pearl St., Pearl River, N. Y. (RF; U)

Graflex, Inc., 154 Clarissa St., Rochester 8, N. Y. (C)

Griscombe Products, Inc., 133 W. 21 St., New York 11. (C; MI—Enlargers; RF; RO; U)

Hall & McChesney, Inc., 1233 Oswego Blvd., Syracuse, N. Y. (U)

The Haloid Co., 2-20 Haloid St., Rochester 3, N. Y. (MI—Continuous xerographic printers for use with microfilm)

Hanimex (USA), Inc., 770 Eleventh Ave., New York. (C; RF)

The Microcard Corp., Box 314, La Crosse, Wis. (RO; U)

Microlex Corp., 1 Graves St., Rochester 14, N. Y. (RO—NI)

Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6. (RF—with facilities for making prints by an electrochemical method)

Ozalid, Div. of General Analine & Film Corp., Johnson City, N. Y. (C—for making prints; MI—Enlargers, processors; RF; U)

Peerless Photo Products, Inc., Shoreham, L. I., N. Y. (MI—Flow-type reducing camera)

Photostat Corp., 1001 Jefferson Rd., Rochester 3, N. Y. (C; MI—Enlargers; RF)

Recordak Corp., 415 Madison Ave., New York 22. (C; RF; RO; U)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y. (C; RF; RO; U)

U. S. Microfilm Co., 868 Main St., Stamford, Conn. (C; RF)

Visirecord, Inc., Copiague, L. I., N. Y. (U)

Typewriters

THE ADVANCES of office "automation" have not put the typewriter out of business. On the contrary, this old workhorse of the office is proving uncommonly well suited to the tasks of today's offices. It has shown unanticipated versatility. Without neglecting its basic duties as a device to print neat, clear copy, it has become, among other things, a systems machine for use in accounting, a substitute for the expensive typesetting equipment used to prepare printed copy for magazines and books, and a "point of origin" machine for entering data into integrated data processing systems.

It has acquired these added talents without sacrificing any of its conventional abilities to prepare neat and clear correspondence. In fact, these qualifications have been enhanced by the development of numerous refinements. Such features as horizontal and vertical half-spacing, simplified setting of margins and tabulation stops, the addition of special keys, and, above all, the development of electrification have greatly improved the basic machine over the years.

The last two years have brought about several important advances.

One, of considerable significance, was the development of a feature by which a typewriter's tabulating mechanism can sense metallic ink printed on business forms. Forms used with this feature are printed with vertical lines of metallic ink, these lines substituting for the usual ink line at the left of each box on a fill-in form.

When the electronic sensing feature is in use, tabulation is accomplished by pressing a special key. The carriage moves until the metallic ink line is sensed by a special device, and it then stops just beyond the line, at a point where the typist can make her entry without further tabulation or spacing.

What this means is that it is not necessary to set tab stops on the machine.

The tabulation setting is accomplished by the business form itself. Two considerable advantages are at once apparent: (1) The typist's problem of filling in forms is very much reduced—for adjusting the carriage to the boxes has always been laborious. (2) The designers of forms are given new freedom in form layout, since it is no longer necessary to group the headings in vertical alignment under the smallest number of tab stops that can be used; the individual blanks can thus be given the full space required for the information to be entered, without compromising in order to simplify the tabulating problem.

Some machines may be used to control other typewriters so that a typist at one keyboard may turn out several original copies simultaneously. Such equipment may be further modified so that only certain portions of the original typing may be duplicated by the slave machine(s). Thus, a related set of business forms can be prepared at one writing, the appropriate information being transferred as required to forms typed by slave machines. In this sense, the typewriter becomes a form of "one-writing" bookkeeping system, working on the same principle of selective copying that is used effectively in pegboard and other "one-writing" systems using spot carbon.

Typewriters may be operated not only by other typewriters, but also by automatic control devices using rolls like those used on player pianos. Such typewriters prepare letters automatically at speeds as high as 135 words a minute. Form letters may be punched into the master roll, and provisions can be made so that the machine will stop to allow a typist to insert variable information, such as prices, dates, and names.

Similarly, some automatic controls are designed for use with rolls containing a selection of paragraphs which can be combined as required to create an individually typed form letter. The machine can be programmed to type only the desired paragraphs, skipping automatically over those not being used. In one modification, a pair of rolls can be used to control one machine, permitting alternate paragraphs to be typed from each roll. The particular advantage of this arrangement is that in high-volume work, one roll advances while the other is being used for typing; thus the time required for the machine to skip over material not being used is eliminated.

Automatic typing permits a single typist to operate two or more machines at once. Her chief concern is to start one machine, then the next, return to the first for manual fill-ins as they occur, make corresponding fill-ins on the second machine, remove the first letter and start another, finish the second letter similarly and start another, and so on. Depending on the length of the letters and the number of manual fill-ins, one typist may handle as many as four or five machines.

Another type of machine is used for composing. It is capable of "justifying" line lengths so that both margins are in even vertical alignment. These machines are often supplied with a wide variety of interchangeable type fonts, including italics and special symbols. They can handle type in varying sizes as well as styles. Thus, they can be used to prepare copy for magazines, small newspapers, announcements, mailing pieces, and the like; the copy, as prepared on the typewriter, may be photographed and reproduced in volume by offset or similar methods.

Machines made for varying needs

Several basic types of office typewriter have long been familiar. These include noiseless machines, machines using carbon ribbons to obtain copy of exceptional clarity, long carriage machines intended for statistical work, and electrical machines.

In addition, several semielectric models are on the market. In one type the keyboard is electric while the carriage return is manual; in another type the carriage return is electric and the keyboard is manual.

Other interesting types among today's machines include designs with modifications for use in preparing bar graphs (keys with appropriate designs are used), models with embossed codes resembling Braille for the use of the blind, and machines for one-armed typists (the modifications being intended to eliminate two-hand steps such as typing single capitals).

Another development of importance has been the introduction of the electric portable typewriter. While the machine is not fully electrified (the carriage is returned manually), it represents a solution to a problem that had been unanswered for a long time.

Another portable served two years ago to introduce an improved method for changing ribbons. The ribbon is carried in two plastic cases, somewhat like the small film magazines used in home movie cameras, and can be changed without being touched by hand. This feature has now been made available on standard machines also.

Recent developments have also included interchangeable type. The type can be changed by the operator quite simply, making it possible for the typewriter to print additional symbols and characters needed in specialized work.

One of the important modifications to the typewriter in recent years has been the addition of devices to enable it to read and/or punch a code in a paper tape. The typewriter can thus turn out coded information as a by-product of typing, and this code can be read in turn by other typewriters, by communications equipment, by tape-to-card punches, and other types of business equipment.

Punched paper tape is one of the basic "common languages" available for integrated data processing, of course. Consequently, the typewriter has become a basic instrument for introducing data into an integrated system, whereby business machines of all types can be controlled automatically by the output from other business machines. It can thus be tied into the most elaborate electronic computer systems.

Similar codes may be punched into the edge of a card, and some typewriters are capable of both punching and reading such cards. Other IDP modifications have adapted the basic typewriter so that some models can encode material directly on magnetic tape, such as is used in electronic computers. Still others can print out the results of data processing from computers and from equipment measuring manufacturing processes, such as pressure gauges and thermometers.

Another variation of the standard typewriter is the systems machine, which is equipped with a front feed carriage and can be used in a number of bookkeeping applications. The carriage is designed to hold business forms of various types, and the machine may be equipped with a device by which continuous forms may be advanced quickly the proper number of line spaces between successive entries. Systems typewriters may fit very well into certain payroll, accounts payable, accounts receivable, and other operations.

Thus the typewriter is making itself indispensable in the automated office. It may be the oldest office machine, historically, but in its practical usefulness it is one of the newest.

The Manufacturers

The list which follows covers the major manufacturers of office typewriters. The types of machines offered are indicated by the following codes:

A—Automatic typewriters, other than machines used in integrated data processing.

C—Composing and justifying machines.

IDP—Machines which read and/or produce a "common language" record or are otherwise suited for use in integrated data processing systems.

MI—Miscellaneous.

N—Noiseless machines.

NI—No information available at press time on current products.

PE—Portable electric machines.

PM—Portable manual machines.

SE—Standard electric machines.

SM—Standard manual machines.

SY—Systems machines.

Addo-X, Inc., 300 Park Ave., New York. (PM; SE; SM; SY)

R. C. Allen Business Machines, Inc., 678 Front Ave., N.W. Grand Rapids 4, Mich. (MI—Semi-electric; SM)

Alma Office Machine Corp., 34 E. 30 St., New York 16. (PM; SM)

American Automatic Typewriter Co., 2323 N. Pulaski Rd., Chicago 39. (A)

American International Office Equipment Co., 7940 W. Third St., Los Angeles 48. (PM—NI; SE—NI; SM—NI)

American Voss Corp., 18097 Sorrento Ave., Detroit 35. (C; PE (in near future); PM; SM; SY)

Commercial Controls Corp., Subsidiary of Friden, Inc. SEE: Friden, Inc.

Ralph C. Coxhead Corp., SEE: Vari-Typer Corp.

DeJur-Amsco Corp., 45-01 Northern Blvd., Long Island City 1, N. Y. (PM; SE; SM)

Facit, Inc., 404 Fourth Ave., New York 16. (PM; SM)

Friden, Inc., 2350 Washington Ave., San Leandro, Calif. (A; C; IDP)

Inter-Continental Trading Corp., 90 West St., New York 6. (PM; SM)

International Business Machines Corp., 590 Madison Ave., New York 22. (C; IDP; MI—Electric models with electronic tabulation; SE; SY)

Olivetti Corp. of America, 580 Fifth Ave., New York 36. (PM; SE; SM)

Paillard Inc., 100 Sixth Ave., New York 13. (MI—Semi-electric; PM; SM)

Remington Rand, Div. of Sperry Rand Corp., 315 Fourth Ave., New York 10. (C; IDP; N; PM; SE; SM; SY)

Robotyper Corp. SEE: Royal McBee Corp.

Royal McBee Corp., Westchester Ave., Port Chester, N. Y. (A; PM; SE; SM; SY)

Royal Typewriter Co. SEE: Royal McBee Corp.

Shepard Laboratories, Inc., 480 Morris Ave., Summit, N. J. (A)

Siemag Office Machines Corp., 391 Fourth Ave., New York 16. (MI—Semi-electric, and special machines for disabled workers; SM; SY)

Smith-Corona Inc., 701 E. Washington St., Syracuse 1, N. Y. (IDP; PE; PM; SE; SM; SY)

Underwood Corp., 1 Park Ave., New York 16. (A; IDP; PM; SE; SM)

Vari-Typer Corp., 720 Frelinghuysen Ave., Newark 5, N. J. (C—with interchangeable fonts)

Trade Names Guide

Following is a list of trade names used by manufacturers of products covered in the "Tools of the Office" section, as reported by the manufacturers concerned. Because of space restrictions, this list is limited to names of machines and certain specialized equipment. As a rule, office systems and items of furniture are not included, nor are trade names that coincide with company names.

ABC—Payroll systems of the "one-writing" type. Burroughs Corp., Todd-Hadley Div.

ACPC — Bookkeeping machine. Olivetti Corp. of America.

ADEC — Intercommunications systems. American Development Electronics Co.

AF — Spirit duplicators. Hecto Products, Inc.

AMRAC — Intercommunications systems. American Mica Radio Corp.

ACCRA-FEED — Collator. Addressograph-Multigraph Corp.

ACCU-RITE — "One-writing" accounting systems. Business Systems Corp.

ACTIFILM — Printing units and supplies for record systems employing copies of unitized microfilm. Ozalid, Div. of General Aniline & Film Corp.; Filmsort Div., Dexter Folder Co.

ADD-MASTER—Adding machines. American Voss Corp.

ADD-MATE — Adding machines. Underwood Corp.

ADD-PUNCH — Combination adding machine and tape punch, for integrated data processing systems. Friden, Inc.

ADDRESS-A-MATIC — Addressing machines. Address-A-Matic Co., Inc.

ADDRESSETTE — Addressing machine. Du Prints, Inc.

ADLER—Typewriters. Addo-X, Inc.

ADMINISTRATOR — Typewriter. Royal Typewriter Co., Div. of Royal McBee Corp.

A-DRESS-R—Addressing equipment. Nettle Mfg. Co.

AIRTUBE—Pneumatic tube mail systems. Lamson Corp.

ALISON — Spirit duplicators. Duplicators, Inc.

ALL-FACTS — Bookkeeping systems. Wilson Jones Co.

ALL-PURPOSE VOICEWRITER — Dictating and transcribing equipment. Thomas A. Edison Industries, McGraw-Edison Co.

AMBASSADOR—Spirit duplicators. Copy-Plus, Inc.

AMBASSADOR — Typewriters. Paillard, Inc.

AMPLICALL — Intercommunications systems. Rauland-Borg Corp.

ANALYZING READER—Character recognition equipment for integrated data processing systems. Intelligent Machines Research Corp.

APECO—All products of American Photocopy Equipment Co.

APERTURE CARDS—Cards used in filing systems employing unitized microfilm. Filmsort Div., Dexter Folder Co.; Recordak Corp.; Remington Rand, Div. of Sperry Rand Corp.

ARISTOCRAT — Portable typewriter. Royal Typewriter Co., Div. of Royal McBee Corp.

ARROW—Diazo copying equipment. Peck & Harvey.

AUDIPAGE—Radio paging system. Philco Corp.

AUDIT—Bookkeeping and accounting machines. Olivetti Corp. of America.

AUDITROL — Binder-type "one-writing"

bookkeeping systems. Bates Accounting Forms Co., Inc.

AUDOGRAPH — Dictating and transcribing equipment. The Gray Mfg Co.

AUTO-DIAL — Intercommunications systems. Radio Corp. of America.

AUTO FEED — Photocopy equipment. Peerless Photo Products, Inc.

AUTOMATIC — Stencil duplicators. Vari-Color Duplicator Co.

AUTOMATIC PAGER—Paging and public address system. Mohawk Business Machines Corp.

AUTO-PROCESSOR — Photocopying equipment. Copycat Corp.

AUTO-PUNCH—Tape perforators, for use in integrated data processing systems. Monroe Calculating Machine Co.

AUTO-STAT — Photocopying equipment. American Photocopy Equipment Co.

AUTO-TYPIST — Automatic typewriting equipment. American Automatic Typewriter Co.

AZOGRAPH — Duplicating equipment using special "clean" liquid process. A. B. Dick Co.

BAMBINO—Diazo copying machine. Ozalid, Div. of General Aniline & Film Corp.

BANDA — Spirit duplicators. Old Town Corp.

BANTAM—Verifax copying machine. Eastman Kodak Co.

BELFONE—Intercommunications systems. Bell Sound Systems, Inc.

BELL & HOWELL—Microfilm equipment, distributed by Burroughs Corp.

BIZMAC — Electronic data processing systems. Radio Corp. of America.

BLU-RAY — Diazo copying equipment. Peerless Colonial Products, Inc.

BOOK COPIER — Photocopying equipment. Copease Corp.

BOOK ROTOR-FILES — Rotary files for books, binders, etc. Wassell Organization, Inc.

BOOKLETEER — Collator with stitching attachment. J. Curry Mendes Corp.

BUSINESS TRANSACTOR — Input-output units for electronic digital computers. Ferranti Electric, Inc.

BUSINESS-RITER—Typewriter. American Voss Corp.

CADM—Collators. Wadsworth Mfg. Co.

CABLE-TYPIST—Automatic copying typewriter equipment. American Automatic Typewriter Co.

CALCULER-D — Chart-type payroll tax computer. Ayres Corp.

CALL/SENDER — Intercommunications systems. Wm. M. Smith Co.

CAMEO — Photocopying equipment. Copease Corp.

CARD-A-DRESSER — Spirit addressing equipment. Diebold, Inc.

CARDATRON — Punched card input-output equipment for electronic data processing systems. ElectroData Div., Burroughs Corp.

CARDATYPE—Automatic accounting machine system using punched cards. International Business Machines Corp.

CARDINEER—Mechanized card file. Diebold, Inc.

CARDVERTISER—Postcard printers. The Elliott Addressing Machine Co.

CARLSON — Automatic paragraph selecting typewriter. Robotyper Corp., Royal Typewriter Co.

CESCO — Visible record equipment and other products. The C. E. Sheppard Co.

CHALLENGER — Intercommunications equipment. David Bogen Co., Inc.

CHAMPION — Adding machines. Victor Adding Machine Co.

CHARACTRON — Computer readout device, cathode ray tube type. Stromberg-Carlson, Div. of General Dynamics Corp.

CHARGA-PLATE — Credit identification system using integrated data processing principles. Farrington Mfg. Co.

CHEMOGRAPH—Duplicating equipment using special "clean" liquid process. Ditto, Inc.

CLASSIC—Calculators. Rex-Rotary Distributing Corp.

CODE-CALL — Paging systems. Wheelock Signals, Inc.

COL-A-TRON — Collators and sorting equipment. Associated Industrial Designers.

COMET—Diazo copying equipment. Paragon-Revolute Corp.

COMMANDER — Dictating and transcribing equipment. Comptometer Corp.

COMMUNO-PHONE — Intercommunications systems. David Bogen Co., Inc.

COMPACT — Photocopying equipment. Cormac Industries, Inc.

COMPANION — Transcribing equipment. Comptometer Corp.

COMPANION—Portable typewriter. Royal Typewriter Co., Div. of Royal McBee Corp.

COMPTOGRAPH—Calculating machines. Comptometer Corp.

COMPTOTAPE — Programmed data preparing and verifying machine for integrated data processing systems. Comptometer Corp.

COMPU-PUNCH — Tape-punching calculator for use in integrated data processing systems. Friden, Inc.

COMPUTYPER — Automatic writing, calculating, and billing machines. Friden, Inc.

CON-FER-PHONE — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

CONQUEROR — Spirit duplicators. The Heyer Corp.

CONSTAT — Photocopying equipment. F. G. Ludwig, Inc.

CONTEX — Calculators. Bohn Duplicator Corp.

CONTEX—Calculators. Silver Bells, Ltd.

CONTINU-MATIC — Stencil addressing systems. Weber Marking Systems, Div. of Weber Addressing Machine Co., Inc.

CONTOURA — Photocopying equipment. F. G. Ludwig, Inc.

CONTOURA-MATIC — Photocopying equipment. F. G. Ludwig, Inc.

CONTROLLER—Pocket calculator. Silver Bells, Ltd.

CONVE-FILER — Mechanized card file. Remington Rand, Div. of Sperry Rand Corp.

CONVERS-O-CALL — Intercommunications systems. National Inter-Communicating Systems, Inc.

COPY CLARK—Photocopying equipment. Photorapid of America, Inc.

COPYFLEX — Diazo copying equipment. Charles Bruning Co., Inc.

COPYMAKER — Spirit duplicator. Old Town Corp.

COPYMASTER — Diazo copying equipment. Peck & Harvey.

COPYREX — Spirit duplicators. Rex-Rotary Distributing Corp.

COPY-RITE — Spirit duplicators. Wolber Duplicator & Supply Co.

COPY-TYPIST—Automatic copying typewriter equipment. American Automatic Typewriter Co.

COPY-WRITER — Pegboard-type "one-writing" bookkeeping systems. Norfield Methods & Procedures, Inc.

CORONA — Adding machines. Smith-Corona Inc.

CORONET — Dictating machine. Comptometer Corp.

CORONET — Photocopying equipment. Cormac Industries, Inc.

CORRES-FILES — Rotary correspondence files. Wassell Organization, Inc.

CORVETTE — Photocopying equipment. Cormac Industries, Inc.

COTON—Microfilm equipment. Photostat Corp.

CUB — Photocopying equipment. Hunter Photo-Copyist, Inc.

CURMANCO — Correspondence handling equipment and other products. Currier Mfg. Co.

CURRY—Collators. J. Curry Mendes Corp.

CURVETTE — Spirit duplicators. Copy-Plus, Inc.

CUSTOM—Adding machines. Victor Adding Machine Co.

DM—Desk model postage meter. Pitney-Bowes, Inc.

DASHAGRAPH — Addressing equipment. Dashew Business Machines, Inc.

DASHAPLATES — Embossed plates used for automatic inputs into data processing systems. Dashew Business Machines, Inc.

DATA SYNCHRONIZER — Simultaneous reading, writing, and calculating machine, used in electronic data processing systems. International Business Machines Corp.

DATA TRANSCEIVER — Punched card transmitting and receiving equipment. International Business Machines Corp.

DATABOSSER—Address plate and tag embossing equipment. Dashew Business Machines, Inc.

DATAFAX—Facsimile-type intercommuni-

cations and copying equipment. Stewart-Warner Electronics.

DATAFAX — Facsimile-type intercommunications and copying equipment. The Western Union Telegraph Co.

DATAFILE—Multiple magnetic tape data storage equipment used in electronic data processing systems. ElectroData Div., Burroughs Corp.

DATAFLO — Units and systems for integrated data processing. Underwood Corp.

DATAMATIC—Electronic data processing systems. Datamatic Corp.

DATARECORDER — Electronic data recording equipment. Dashew Business Machines, Inc.

DATATRON — Electronic data processing systems. ElectroData Div., Burroughs Corp.

DATATYPER—Address plate and tag embossing equipment. Dashew Business Machines, Inc.

DATAWRITER — Addressing and other equipment using embossed plates. Dashew Business Machines, Inc.

DAV-A-MATIC—Offset duplicators. Davidson Corp.

DECI-MAGIC—Calculators. Marchant Calculators, Inc.

DELUXE — Portable typewriters. Underwood Co.

DE LUXE—Stencil duplicators. Vari-Color Duplicator Co.

DESK ROTOR-FILES — Work stations with rotary correspondence and card files. Wassell Organization, Inc.

DEXIGRAPH — Photocopying equipment. Remington Rand, Div. of Sperry Rand Corp.

DIAGRAPHY — Special "inkless" stencil duplicating method. The Print-O-Matic Co., Inc.

DIAL DICTATION — Network dictation system. The SoundScriber Corp.

DIAL INTERCOM SYSTEMS—Intercommunications systems. Federal Telephone & Radio Co.

DIAL SELECTOR ROBOTYPER—Automatic typewriter equipment with paragraph and letter selecting facilities. Robotyper Corp., Royal Typewriter Co.

DIAL-A-FILE—Mechanized card files. Diebold, Inc.

DIAL-X — Intercommunications systems. Stromberg-Carlson Co.

DIANA — Electronic data processing systems. Laboratory for Electronics, Inc.

DIAZOPROCESSOR — Diazo copying equipment. Tecnifax Corp.

DICTACORD—Continuous belt voice recorder. Dictaphone Corp.

DICTATAPE — Multi-channel voice recording systems. Dictaphone Corp.

DICTET—Miniature tape recorder for "in-the-field" dictation. Dictaphone Corp.

DICTET TYPER—Tape transcribing machine. Dictaphone Corp.

DIGIT-MATIC — Digital printer (arithmetical functions) for integrated data processing systems. Victor Adding Machine Co.

DIRECT MULTIPLIER — Billing machine. Burroughs Corp.

DIRECT-A-CALL — Intercommunications systems. Connecticut Telephone & Electric Corp.

DIRECTOR — Adding and bookkeeping machines. Burroughs Corp.

DIVISUMMA — Printing calculators. Olivetti Corp. of America.

DOUBLE SERVICE—Gelatin duplicators. Hecto Products, Inc.

DRI-STAT — Photocopying equipment. Peerless Photo Products, Inc.

DUAL-80 — Stencil duplicator. Weber Marking Systems, Div. of Weber Addressing Machine Co., Inc.

DUAL-LITH—Combination offset and relief process duplicators. Davidson Corp.

DUO—Intercommunications systems. Tele-Norm Corp.

DUOMATIC — Photocopying equipment. Duophoto Corp.

DUPLEX—Photocopying equipment. Copease Corp.

DUPLEX — Adding machines. Olivetti Corp. of America.

DUPLICARBO — Spirit duplicators. Du Prints, Inc.

DUPLICARD — Stencil duplicators. Rutherford Duplicator Co.

DUPLI-RITER — Addressing equipment. The Reynolds & Reynolds Co.

DUPLIROTO — Stencil duplicators. Du Prints, Inc.

E-101—Desk-size electronic computer. Burroughs Corp.

ERMA—Electronic bank bookkeeping system. Developed by Stanford Reseach Institute.

E-Z SORT — Edge-punched card systems and sorting facilities. E-Z Sort Systems, Ltd.

E-Z-TALK — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

ECONICOM — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

EFFICIENCY — Gelatin duplicators. The Heyer Corp.

EDIPHONE — Dictating and transcribing equipment. Thomas A. Edison Industries, McGraw-Edison Co.

ELECOM — Electronic data processing systems. Underwood Corp.

ELECTRITE — Semi-electric typewriters. R. C. Allen Business Machines, Inc.

ELECTROFAX — Electrostatic copying process. Radio Corp. of America.

ELECTROFILE — Mechanized card files. Johnson Fare Box Co., Electrofile Div.

ELECTRONIC BUSINESS COMPUTER — Electronic data processing systems. Underwood Corp.

ELECTRONIC DATABOSSER — Multiple character embossing machine. Dashew Business Machines, Inc.

ELECTRONIC MESSENGER — Facsimile-type communications equipment. Electronic Communications, Inc., Air Associates Div.

ELECTRONIC PAGING SYSTEM — Paging systems. International Business Machines Corp.

ELECTRO-REX — Facsimile-type stencil cutter. Rex-Rotary Distributing Corp.

ELECTROSTATIC ADDRESS LABEL PRINTER—Xerographic addressing equipment. International Business Machines Corp.

ELECTROSUMMA—Adding and posting machines. Olivetti Corp. of America.

ELECTRO-VOX — Intercommunications systems. Fanon Electric Co., Inc.

ELEVATOR—Mechanized card files. Diebold, Inc.

ELLIOTT FISHER—Bookkeeping and accounting machines. Underwood Corp.

EMBEE — Folding machines. Davidson Corp.

ERICOFON—Telephones for intercommunications systems. North Electric Co.

EUCLID — Modular units for integrated data processing systems. Stromberg-Carlson Co.

EVER READY—Binder-type "one-writing" bookkeeping systems. Bates Accounting Forms Co., Inc.

EVEREADY — Gelatin duplicators. Hecto Products, Inc.

EVEREST — Adding and calculating machines; typewriters. Alma Office Machine Corp.

EXACT-FAX — Photocopying equipment. General Photo Products Co., Inc.

EXACT-PHOTE-COPY — Photocopying equipment. General Photo Products Co., Inc.

EXAMINER—Reader for unitized microfilm. Filmsort Div., Dexter Folder Co.

EXECUTIVE — Electric typewriters. International Business Machines Corp.

EXECUTIVE—Calculators. Monroe Calculating Machine Co.

EXECUTIVE — Adding Machines. Victor Adding Machine Co.

FALTEX—Combination folding and envelope opening machine. Lansdale Products Corp.

FANFARE — Intercommunications systems. Fanon Electric Co., Inc.

FAXWRITER — Facsimile-type communications equipment.

FEATHERTOUCH — Denominators. The Denominator Co., Inc.

FIGUREMASTER—Calculating machines. Marchant Calculators, Inc.

FIGUREMATIC — Calculating machines. Marchant Calculators, Inc.

FILEVATOR — Mechanized card file. Le Febure Corp.

FILM-A-RECORD — Microfilm equipment. Remington Rand, Div. of Sperry Rand Corp.

FILMCHEK—Microfilm editing unit. Atlantic Microfilm Corp.

5-LINE—Adding machines. Victor Adding Machine Co.

FLASH-A-CALL — Intercommunications systems—Inter-Communication System of America.

FLEETWING — Stencil duplicators. Marr Duplicator Co., Inc.

FLEXIFONE — Intercommunications systems. DuKane Corp.

FLEXISORT—Edge-punched card systems and sorting equipment. Superior Business Machines, Inc.

FLEXOGRAPH — Stencil duplicators. The Heyer Corp.

FLEXOWRITER — Automatic tape-reading and tape-punching typewriters. Friden, Inc.

FLOFILM — Microfilm equipment. Diebold, Inc., Flofilm Div.

FOLD-O-MATIC — Folding machine. The Print-O-Matic Co., Inc.

FOLD-O-MATIC—Folding machine. Rex-Rotary Distributing Corp.

FONEX — Intercommunications systems. Transelectric Mfg. Co.

FORDIGRAPH — Spirit duplicators. Rex-Rotary Distributing Corp.

FOREMOST—Bookkeeping machines. Remington Rand, Div. of Sperry Rand Corp.

FORMALINER — Forms handling accessory for typewriters. Moore Business Forms, Inc.

FORM-MASTER — Pegboard-type "one-writing" bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

FOTO-FLO — Photocopying equipment. The Haloid Co.

FOTOMATE — Photocopying equipment. Rovico, Inc.

FOUR L — Calculating machines. Monroe Calculating Machine Co., Inc.

FOURTEEN — Thermo-Fax copying machine. Minnesota Mining & Mfg. Co.

G-15 — Electronic data processing system. Bendix Computer Div., Bendix Aviation Corp.

GATHERMATIC—Collators. Thomas Collators, Inc.

GEHA — Stencil duplicators (paste ink type). Milo Harding Co.

GENCO — Photocopying equipment and other products. General Photo Products Co., Inc.

GOLDEN AUTOMATIC—Collators. Collamatic.

GOLDEN TOUCH — Electric typewriter. Underwood Corp.

GRAPHIKA — Proportional spacing typewriter. Olivetti Corp. of America.

GRAYTONE — Calculators. Barrett Adding Machine Div., Lanston Industries, Inc.

HALDA—Typewriters. Facit, Inc.

HALM—Microfilm equipment. Microfilming Corp. of America.

HECCOKWIK—Photocopying equipment. Hunter Photo-Copyist, Inc.

HEKTOGRAPH—Gelatin duplicators. The Heyer Corp.

HELIO—Diazo copying equipment. Photorapid of America, Inc.

HERMES—Typewriters. Paillard, Inc.

HI-Q DIAZOPROCESSOR—Diazo copying equipment. Tecnifax Corp.

HIGH SPEED TAPE READERS — Electronic data processing equipment. Ferranti Electric, Inc.

HILLYER TRANSACTER—Data gathering and transmitting equipment for use in integrated data processing systems. Stromberg Time Corp.

HOLBROOK—Microfilm equipment. Microfilming Corp. of America.

IDEAL — Gelatin duplicators. The Heyer Corp.

INSPECTOR—Reader for unitized microfilm. Filmsort Div., Dexter Folder Co.

INSTAN-FORM — Intercommunications systems of the "electronic handwriting" type. TelAutograph Corp.

INSTANT COPIER—Verifax copying equipment. Photostat Corp.

INTRAFAX—Facsimile-type intercommunications and copying equipment. Western Union Telegraph Co.

INTROMAT — Billing machines. Paillard Inc.

IRONCLAD — Duplicators. Beck Duplicator Corp.

JACKET CARDS—Cards used in record systems employing unitized microfilm. Filmsort Div., Dexter Folder Co.; Recordak Corp.; Remington Rand, Div. of Sperry Rand Corp.

JIFFY PRINT — Relief-type duplicating equipment. American Tag Co.

JUNIOR EFFICIENCY—Gelatin duplicators. The Heyer Corp.

JUSTOWRITER — Automatic tape-operated justifying and composing typewriters. Friden, Inc.

KARD-VEYER—Mechanized card file. Remington Rand, Div. of Sperry Rand Corp.

KEYSORT — Machines and systems using edge-punched cards. Royal McBee Corp.

KEYTRONIC—Sorting machine. Universal Business Machines, Inc.

KING DIAL SYSTEMS—Intercommunications systems. Kellogg Switchboard & Supply Co.

KLEINSCHMIDT — Integrated data processing and wire communications equipment. Smith-Corona Inc.

KNIGHT — Public address and paging equipment. Allied Radio Corp.

KODAGRAPH—Reader for opaque microimages. Eastman Kodak Co.

KOPI-SPOT—Pegboard-type "one-writing" bookkeeping systems. The Shaw-Walker Co.

KWIK-KALL — Intercommunications systems. J. M. Loge, Sound Engineers.

LGP-30 — Desk-size electronic computer. Royal Precision Corp. (Marketed by Royal McBee Corp.)

Trade Names Guide

LAB-L-MASTER—Label addressing equipment. Master Addresser Co.

LADY TYCOON—Dictating and transcribing equipment. The SoundScriber Corp.

LANCER—Diazo copying equipment. Peck & Harvey.

LAY-AWAY—Pegboard-type "one-writing" bookkeeping systems. The C. E. Sheppard Co.

"LAZY SUSAN"—Collator. Associated Industrial Designers.

LEADER — Portable typewriter. Underwood Corp.

LEDGER-CHECKS SYSTEM—"One-writing" bookkeeping system. Institute of Business Research, Div. of Keller-Crescent Co.

LETTERA—Portable typewriters. Olivetti Corp. of America.

LETTERGRAPH — Stencil duplicators. The Heyer Corp.

LETTER-RITER — Portable typewriter. Remington Rand, Div. of Sperry Rand Corp.

LEXIKON—Typewriters. Olivetti Corp. of America.

LIBERATOR—Stencil duplicators. Speed-O-Print Corp.

LIGHTING—Envelope opening and sealing machines. The Bircher Co., Inc.

LINEPLOTTER — Electronic equipment for preparing graphs from punched card or tape inputs. Electronic Associates, Inc.

LISTAX — Addressing equipment. Rex-Rotary Distributing Corp.

LISTOMATIC — Camera used in specialized electronic data processing systems. Eastman Kodak Co.; Addressograph-Multigraph Corp.; Friden, Inc.

LIVE KEYBOARD—Special keyboard used on adding machines. The National Cash Register Co.

LOKATOR — Code paging systems. Edwards Co., Inc.

MCA—Microfilm equipment. Microfilming Corp. of America.

MACEY — Collators. Harris-Seybold Co.; The Macey Co.; Pitney-Bowes, Inc.

MAGIC MAILER — Envelope opener and sealer. Pres-To-Line Corp. of America.

MAGI-COPY — Gelatin duplicators. Hecto Products, Inc.

MAGNEFILES — Electronic data storage and processing equipment. Electronics Corp. of America.

MAGNETICON-EDITOR — Dual-turntable editing unit used with dictating records. Magnetic Recording Industries.

MAGNITYPER — Electronic printing equipment. Potter Instrument Co.

MAILMASTER — Envelope opener and sealer. Friden, Inc.

MAIL-O-METER—Mailing machines. Pitney-Bowes, Inc.

MAIL-OPENERS—Envelope openers. Pitney-Bowes, Inc.

MARVEL—Envelope opener. Wilson Jones Co.

MASCO—Products of Mark Simpson Mfg. Co. (Intercommunications systems.)

MASTERLITH—Offset duplicator. Photostat Corp.

MEDALIST — Microfilm reader. Recordak Corp.

MERCURY — Dictating and transcribing equipment. Thomas A. Edison Industries, McGraw-Edison Co.

MERCURY — Electronic data processing system. Ferranti Electric, Inc.

MERCURY—Stencil duplicators. Marr Duplicator Co., Inc.

MESSAGE REPEATER—Special automatic repeating tape recorder. Mohawk Business Machines Corp.

METEOR—Diazo copying equipment. Paragon-Revolute Corp.

MICRO OPAQUE READER—Reader for opaque microimages. American Optical Co.

MICRO-FILE—Microfilm equipment. Recordak Corp.

MICROFILLER — Unit for inserting unitized microfilm into cards. Filmsort Div., Dexter Folder Co.

MICRO-JACKETS — Cards for record systems using unitized microfilm. Atlantic Microfilm Corp.

MICROMAT—Microfilm equipment. Hanimex (USA), Inc.

MICROMATIC—Spirit duplicators. Copy-Plus, Inc.

MICROPRINT READER — Reader for opaque microimages. Eastman Kodak Co.

MICROSTRIP—Record systems employing unitized microimages. Hall & McChesney, Inc.

MICROTAPE—Record systems employing unitized microimages. American Microfilming Service Co.; The Microcard Co.

MICRO-TAPESTEPPER—Magnetic tape transport equipment, used in electronic data processing systems. Anelex Corp.

MICROTRONICS—Microfilm equipment. Photostat Corp.

MICRO-TWIN — Combination microfilm camera and reader. Burroughs Corp.

MIDGETALK — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

MIDGETAPE — Pocket-size tape recorder. Mohawk Business Machines Corp.

MILLER—Payroll systems. The C. E. Sheppard Co.

MIMEOGRAPH—Stencil duplicators. A. B. Dick Co.

MIMEOSCOPE—Stencil scopes. A. B. Dick Co.

MINI—Duplicators. Vari-Color Duplicator Co.

MINIAC — Electronic data processing equipment. Marchant Calculators, Inc.

MINICORD — Pocket-size tape recorder. Minicorder Corp. of America.

MINI-RECORD—Microfilming equipment. The Haloid Co.

MIRACLE PRIVATE PAGING SYSTEM —Radio-type paging system. Dictograph Products, Inc.

MITE — Miniaturized teleprinter equipment. Teleprinter Co.

MODAC — Electronic data processing systems and accessories. Airborne Instruments Laboratory, Inc., Modac Div.

MONARCH — Stencil duplicators. Marr Duplicator Co., Inc.

MONARCH — Adding machines. Remington Rand, Div. of Sperry Rand Corp.

MONROBOT—Electronic data processing equipment. Monroe Calculating Machine Co.

MONRO-MATIC — Calculators. Monroe Calculating Machine Co.

MOUNTER—Unit for mounting unitized microfilm in cards. Filmsort Div., Dexter Folder Co.

MULTI-COM — Intercommunications systems. Radio Corp. of America.

MULTIFONO — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

MULTIGRAPH—Relief and offset duplicating equipment. Addressograph-Multigraph Corp.

MULTILITH—Offset duplicators. Addressograph-Multigraph Corp.

MULTI-MATIC — Bookkeeping systems. Remington Rand, Div. of Sperry Rand Corp.

MULTIOPENER — Envelope opener. Friden, Inc.

MULTIPHARIOUS — Binder-type "one-writing" bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

MULTIRAPID — Calculator. Alma Office Machine Corp.

MULTI-RECORD — Pegboard-type "one-writing" bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

MULTI-RITE — Pegboard-type "one-writing" bookkeeping systems. The C. E. Sheppard Co.

MULTISEALER — Envelope sealer. Commercial Controls Corp., Friden, Inc.

MULTI-SPRED — Strip bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

MULTISUMMA — Printing multipliers. Olivetti Corp. of America.

MULTO—Calculators. Addo-X, Inc.

MULT-O-MATIC—Automatic multiplier. Victor Adding Machine Co.

MUNACS—Unit accounting systems. Moore Business Forms, Inc.

NEOFLOW — Flow-type reducing camera. Peerless Photo Products, Inc.

OPC — Printing calculator. Olivetti Corp. of America.

ODHNER—Adding machines. Facit, Inc.

OFFICE-RITER—Typewriter. Remington Rand, Div. of Sperry Rand Corp.

OLYMPIA — Typewriters. Inter-Continental Trading Corp.

ORMIG — Spirit duplicators. Copy-Craft, Inc.

OZACARD—Cards and printing units used in record systems employing copies of unitized microfilm. Ozalid, Div. of General Aniline & Film Corp.; Filmsort Div., Dexter Folder Co.

P-A-X—Intercommunications systems. Automatic Electric Sales Corp.

P&H — Diazo copying equipment. Peck & Harvey.

PACEMAKER—Typewriter. Smith-Corona Inc.

PACESETTER—Spirit duplicators. Copy-Plus, Inc.

PAJAR — Paging systems. Auth Electric Co., Inc.

PATHFINDER — Bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

PAYCOMPTROLLER — Pegboard-type "one-writing" bookkeeping systems. Business Systems Corp.

PAYROLLMASTER—Pegboard-type "one-writing" bookkeeping systems. Payroll Tax Service, Inc.

PAYWRITE — Pegboard-type "one-writing" bookkeeping systems. The Reynolds & Reynolds Co.

PEG STRIP—Pegboard-type "one-writing" bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

PEG-RITE — Pegboard-type "one writing" bookkeeping systems. Master-Craft Corp.

PEGASUS—Electronic data processing systems. Ferranti Electric, Inc.

PERF-O-READER — Reader for sensing perforated characters in paper documents, usable for inputs into integrated data processing systems. Cummins-Chicago Corp.

PHONAUDOGRAPH—Network dictating equipment. The Gray Mfg. Co.

PHOTO CLERK — Photocopying equipment. Remington Rand, Div. of Sperry Rand Corp.

PHOTOCHARGER—Photocopying equipment. Remington Rand, Div. of Sperry Rand Corp.

PHOTORECORD—Microfilm equipment. Graflex, Inc.

PHOTOSCOPE—Camera for making stencils. Gestetner Duplicator Corp.

PICCOLO—Spirit duplicator. Copy-Craft, Inc.

PLAINSITE — Payroll systems. Business Systems Corp.

PLATEMAKER—Exposing unit for photocopying and presentized offset plate preparation. Copease Corp.

PLUS—Adding machines and calculators. Control Systems, Inc., Plus Computing Machines Div.

POCKET PAGER—Radio paging systems. Motorola, Inc.

POCKET-PAGER — Personal paging systems. DuKane Corp.

POINT O' SALE — Recording equipment for reading pre-punched data in merchandise tags, for use in integrated data processing systems. Telecomputing

Corp.; Remington Rand, Div. of Sperry Rand Corp.

PORTABLE ADDRESSER—Spirit addressing machine. The Heyer Corp.

PORTAGRAPH — Photocopying equipment. Remington Rand, Div. of Sperry Rand Corp.

PORT-A-PHONE — Intercommunications systems. Feiler Engineering & Mfg. Co.

POST-MASTER—Post card printer, spirit type. Master Addresser Co.

POST-MASTER—Posting machine. Underwood Corp.

POST-TRONIC—Electronic data processing equipment using magnetic codes on paper documents. The National Cash Register Co.

POWERS—Punched card equipment. Remington Rand, Div. of Sperry Rand Corp.

PREMIER — Folding machines. Martin-Yale, Inc.

PREMIER—Thermo-Fax copying machine. Minnesota Mining & Mfg. Co.

PREMIER AUTO-FOLDER—Folding machines. Martin-Yale, Inc.

PREMIER AUTO-OPENER — Envelope opener. Martin-Yale, Inc.

PRESIDENT—Accounting machines. Monroe Calculating Machine Co.

PRESIDENT — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

PRESTOCALL—Intercommunications systems. Cambridge Co.

PRINT-O-SCOPE—Drawing scope. Print-O-Matic Co., Inc.

PRINT-PUNCH — Paper tape punching unit for use in integrated data processing systems. Clary Corp.

PRINT-PUNCH — Machines for printing and punching codes in merchandise tags, for use in integrated data processing systems. Dennison Mfg. Co.

PRIVATE LINE — Intercommunications systems. Connecticut Telephone & Electric Corp.

PRIVATEL — Intercommunications systems. North Electric Co.

PRODUX-MULTATOR—Calculators. Silver Bells, Ltd.

PROFILE — "Common language" storage equipment for integrated data processing systems. Ray Myers Corp.

PROGRAMATIC—Automatic typewriters used in integrated data processing systems. Friden, Inc.

PROTYPE—Photo-composing equipment. Davidson Corp.

QUIET DELUXE — Portable typewriter. Royal Typewriter Co., Div. of Royal McBee Corp.

QUIET-RITER — Portable typewriter. Remington Rand, Div. of Sperry Rand Corp.

RAM — Random access memory unit for storing data in electronic data processing systems. Potter Instrument Co.

RAMAC—Random access memory unit for storing data in electronic data processing systems. International Business Machines Corp.

RAPISTAN — Conveyor belt systems and other products. Rapids-Standard Co., Inc.

RECTIGRAPH — Photocopying equipment. The Haloid Co.

REGINA—Adding machines. Silver Bells, Ltd.

RELAYMATIC—Intercommunications systems. Kellogg Switchboard & Supply Co.

RELIANT — Microfilm equipment. Recordak Corp.

RENA—Spirit addressing and duplicating machines. Du Prints, Inc.

REPROFAX—Electrostatic copying equipment. Reproduction Products Co.

REVELDEX — Rotary card filing equipment. Diebold, Inc.

REVO-FILE—Rotary card files. The Mosler Safe Co.

REVOLUTE — Diazo copying equipment. Paragon-Revolute Corp.

REX RECORDER — Dictating and transcribing equipment. American Dictating Machine Co., Inc.

REX-O-GRAPH—Spirit duplicators. General Binding Corp., Rex-O-Graph Div.

REX-O-SCOPE—Stencil scope. Rex-Rotary Distributing Corp.

ROBOT-KARDEX — Mechanized visible card file. Remington Rand, Div. of Sperry Rand Corp.

ROBOTYPER — Automatic typewriting units. Royal Typewriter Co., Div. of Royal McBee Corp.

ROCKET—Diazo copying equipment. Paragon-Revolute Corp.

ROLODEX — Rotary card files. Zephyr American Corp.

ROL-RAK—Storage racks and filing cabinets mounted on wheels for installation in mobile storage systems. Mobile Racks, Inc.

RONEO — Facsimile copying and stencil duplicating equipment. Addo-X, Inc.

RONEO-TRONIC—Facsimile-type stencil cutter. Addo-X, Inc.

ROTO-FILE—Multiple drum rotary card files. The Mosler Safe Co.

ROTO-KARD — Mechanized card files. Remington Rand, Div. of Sperry Rand Corp.

ROTOR CORRES-FILES — Rotary correspondence files. Wassell Organization, Inc.

ROTOR-FILES — Rotary correspondence and card files. Wassell Organization, Inc.

ROYAL PRECISION—Desk-size electronic computer. Royal McBee Corp.

ROYALIGNER—Forms handling accessory for typewriters. Royal Typewriter Co., Div. of Royal McBee Corp.

ROYALITE — Portable typewriter. Royal Typewriter Co., Div. of Royal McBee Corp.

S-C 5000—High-speed printer for use with electronic data processing systems. Stromberg-Carlson Co.

S-W — Electronic data processing equipment and other products. Stewart-Warner Electronics.

SALES-TRONIC — Electronic sales data processing equipment. The National Cash Register Co.

SATELLITE — Photocopying equipment. Photorapid of America, Inc.

SCOTTIE—Envelope openers. Arnold MacKenzie, Inc.

SCOUT — Photocopying equipment. Cormac Industries, Inc.

SECRETARY — Thermo-Fax copying machine. Minnesota Mining & Mfg. Co.

SELECT-A-CALL — Intercommunications systems. Telecom, Inc.

SELECTADATA — Punched tape data selector for use in integrated data processing systems. Friden, Inc.

SELECTIVE VERTICAL CONVEYOR — Vertical belt conveyor system. Lamson Corp.

SELECTOMAGIC—Forms handling accessory for typewriters. Royal Typewriter Co., Div. of Royal McBee Corp.

SELECT-O-PHONE — Intercommunications systems. Kellogg Switchboard & Supply Co.

SELFCHEK — Type face for automatic reading by character recognition equipment. Intelligent Machines Research Corp.

SENIOR — Photocopying equipment. Cormac Industries, Inc.

SENSIMATIC—Bookkeeping and accounting machines. Burroughs Corp.

SENSIMATIC-TO-TAPE — Bookkeeping and accounting machines equipped to punch paper tape, for use in integrated data processing systems. Burroughs Corp.

SENSITRONIC — Bookkeeping and accounting equipment designed to read magnetic codes on paper documents. Burroughs Corp.

SERIES G—High-speed printers. Burroughs Corp.

SERVOTYPER — Typewriters for output from integrated data processing systems. Underwood Corp.

SHORT CUT BOOKKEEPING SYSTEMS —Bookkeeping systems. Le Febure Corp.

SHORT CUT CREDIT SALES SYSTEMS —Bookkeeping systems. Wilson Jones Co.

SIGMACON — Office communications and control systems. Stow & Davis Furniture Co.

SIGNET — Verifax copying equipment. Eastman Kodak Co.; Photostat Corp.; Recordak Corp.

SILVER STREAK — Spirit duplicators. Wolber Duplicator & Supply Co.

SIMPLAFIND — Mechanized card files. Wheeldex & Simpla Products, Inc.

SIMPLAWHEEL — Mechanized card files. Wheeldex & Simpla Products, Inc.

SIMPLEX—Bookkeeping systems. Wilson Jones Co.

SIMPLO-GRAPH — Bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

(*To Page* 117)

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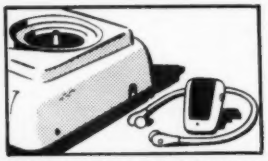

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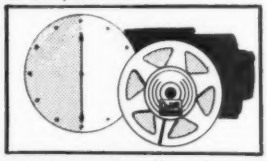
REALLY PORTABLE...WORKS ANYWHERE! The amazing Stenorette weighs only 11 pounds, 10 ounces, takes no more desk space than your briefcase. It's the only dictating machine that even operates perfectly in a moving car! (There's no "needle.") Take it with you to important business meetings; Stenorette's exclusive "Conference" setting lets you record as many voices as you wish. A simple attachment lets you record telephone calls, too.



REMOTE-CONTROL ERASER! Make changes without touching the machine. Relax in your chair, press the button on the "mike," listen to your last words—and *record the correct words right over the error.*

USE THE SAME TAPE OVER AND OVER AGAIN! Dictate for a full 30 minutes. Transcribe. Start again with the same tape if you wish. Stenorette is as economical to *use* as to *buy.*

CHOICE OF TRANSCRIBING ACCESSORIES. Double or single earpieces. Playback control with bar on typewriter or pedal under desk.

WORLD'S EASIEST TRANSCRIBING. Tens of thousands of secretaries operated their Stenorettes flawlessly *within five minutes after they first tried it.* And they all love the clear, restful Stenorette natural pleasant "playback" essential for correctly typed transcription.

FOOLPROOF INDEXING! Typist knows exactly where to start listening, where to enter changes recorded separately, etc.

MOST SENSITIVE DICTATING MICROPHONE. Another Stenorette exclusive. Shout or whisper—hold the microphone wherever you wish. Your voice will play back clearly at its natural level.

NATIONWIDE SALES SERVICE. Hundreds of office managers and purchasing agents (firm names on request) have purchased scores, even hundreds of Stenorettes for their firms. This is ample evidence of their confidence in DeJUR-Grundig's nationwide network of factory-trained Sales/Service Centers. There's one near you.

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Trade Names Guide

(*From page* 114)

SMALL TALK—Intercommunications systems. Mark Simpson Mfg. Co., Inc.

SPEAKER-PHONE—Intercommunications equipment. Telecom, Inc.

SPEEDAUMAT — Addressing and mailing equipment. Addressograph-Multigraph Corp.

SPEE-DEE — Diazo copying equipment. Peck & Harvey.

SPEED-KLECT — Collators. Didde-Glaser Inc.

SPEEDMASTER — Diazo copying equipment. Peck & Harvey.

SPEED-O-LECTRIC — Adding machines. Clary Corp.

SPEEDY PRINTER—Postcard duplicator. Pekas Duplicator Co.

SPIN-A-FILE — Rotary card files. Stellar Tool & Mfg. Co., Inc.

SPIN-DEX—Rotary card file. Business Efficiency Aids.

SPIRIT OF 76 — Spirit duplicators. The Heyer Co.

SPLIT-A-WORD — Dictating equipment. Magnetic Recording Industries.

STANDARD — Stencil duplicators. Vari-Color Duplicator Co.

STANOMATIC — Electronic code-reading and translating device for use in integrated data processing systems. The Standard Register Co.

STATFILE—Microfilm equipment. Photostate Corp.

STENAFAX—Facsimile-type intercommunications and copying equipment. Times Facsimile Corp.

STENOCORD—Dictating and transcribing equipment. Pacific Instruments Corp.

STENORETTE—Dictating and transcribing equipment. DeJur-Amsco Corp.

STITCH-A-FOLD — Collator. Harris-Seybold Co.; The Macey Co.; Pitney-Bowes, Inc.

STORAWAY — Storage equipment for "common language" media used in integrated data processing systems. Tab Products Co.

STUDIO — Typewriters. Olivetti Corp. of America.

STYLE—Stencil duplicators. Marr Duplicator Co., Inc.

SUMMA—Adding machines. Olivetti Corp. of America.

SUMMIRA — Adding machines. Fremaco International, Inc.

SUNDSTRAND — Adding, bookkeeping, and accounting machines. Underwood Corp.

SUPER CHIEF—Intercommunications systems. Talk-A-Phone Co.

SUPER ELEVATOR — Mechanized card files. Diebold, Inc.

SUPER-EFFICIENCY — Gelatin duplicators. The Heyer Corp.

SUPER-MATIC—Calculators. Friden, Inc.

SUPER-RITER — Typewriter. Remington Rand, Div. of Sperry Rand Corp.

SURVEYOR — Reader for unitized microfilm. Filmsort Div., Dexter Folder Co.

SYNCHRO-MATIC—Integrated data processing units. Remington Rand, Div. of of Sperry Rand Corp.

SYNCHRO-MONROE — Tape-punching, adding and accounting machines used in integrated data processing systems. Monroe Calculating Machine Co.

SYNCHROPRINTER — High-speed printers for electronic data processing systems. Anelex Corp.

SYNCHRO-TAPE — Combination tape reader and typewriter. Remington Rand, Div. of Sperry Rand Corp.

T-C-L PRINTER — Postcard duplicator. Hart Mfg. Co.

TN — Intercommunications systems. Tele-Norm Corp.

TAB-ON — Stencil addressing systems. Weber Marking Systems, Div. of Weber Addressing Machine Co., Inc.

TAG-O-GRAPH — Tag and label addressing machine. Weber Addressing Machine Co.

TALLY DENOMINATOR — Denominating equipment. The Denominator Co., Inc.

TAPE MINDER—Equipment for handling tapes used in integrated data processing systems. Cycle Equipment Co.

TAPE SPOOLER — Equipment for handling tapes used in integrated data processing systems. Ferranti Electric, Inc.

TELECORD — Network dictating equipment. Dictaphone Corp.

TELEDATA — Tape transmitter and receiver for wire transmission of data in integrated data processing systems. Friden, Inc.

TELEDIPHONE—Unit for recording telephone conversations. Thomas A. Edison Industries, McGraw-Edison Co.

TELEMAGNET — Automatic telephone answering machine. Mohawk Business Machines Corp.

TELEMATIC — Intercommunications systems. Dictograph Products, Inc.

TELEMIKE — Voice recorders. Miles Reproducer Co., Inc.

TELESCRIBER — "Electronic handwriting" equipment. TelAutograph Corp.

TELETALK — Intercommunications systems. Webster Electric Co.

TELEVOICE — Network dictation systems. Thomas A. Edison Industries, McGraw-Edison Co.

TEMPO—Stencil duplicators. Milo Harding Co.

TEMPOSCOPE—Stencil scopes. Milo Harding Co.

TETRACTYS — Printing calculators. Olivetti Corp. of America.

THE AMERICAN 400 — Spirit marking machine. American Tag Co.

THE AMERICAN JIFFY PRINT — Tag and label marking machine. American Tag Co.

THERMO-FAX — Copying equipment using a heat-sensitivity/infra-red light principle. Minnesota Mining & Mfg. Co.

3M—Products of Minnesota Mining & Mfg. Co.

TICKOMETER — Counting and imprinting machine. Pitney-Bowes, Inc.

TIME SAVER—Payroll systems. Bates Accounting Forms Co., Inc.

TIME-EXA—Adding machines for totaling hours, minutes, and seconds. Silver Bells, Ltd.

TIME-MASTER—Dictating and transcribing equipment. Dictaphone Corp.

TIPPA — Typewriters. American International Office Equipment Co.

TOPFLIGHT — Adding machines. Remington Rand, Div. of Sperry Rand Corp.

TORPEDO—Typewriters. American International Office Equipment Co.

TOUCH-MASTER — Typewriter. Underwood Corp.

TRACT-A-FILE — Shelf filing units for mobile storage mounting. Ramsey Co.

TRANSACTER — Data gathering and transmitting device for integrated data processing systems. Stromberg Time Corp.

TRANSOGRAPH — Special "clean" liquid process duplicating system. Columbia Ribbon & Carbon Mfg. Co., Inc.

TRAVEL-RITER — Portable typewriter. Remington Rand, Div. of Sperry Rand Corp.

TRIPOSTER — Board-type "one-writing" bookkeeping system. Visirecord, Inc.

TRIUMPH — Typewriters. DeJur-Amsco Corp.

TROPHY — Adding machines. Underwood Corp.

TRU-COPY-PHOTE — Photocopying equipment. General Photo Products Co., Inc.

20th CENTURY—Stencil duplicators. Marr Duplicator Co., Inc.

200-B—Battery-operated portable dictating equipment. The SoundScriber Corp.

TYCOON — Dictating equipment. The SoundScriber Corp.

UNIGRAPH — Spirit duplicators. Copy-Plus, Inc.

UNI-POST — Payroll systems. The C. E. Sheppard Co.

UNISERVO—Units for reading and typing on magnetic tape, for use in electronic data processing systems. Remington Rand, Div. of Sperry Rand Corp.

UNISPRED — Binder-type "one-writing" bookkeeping systems. Burroughs Corp., Todd-Hadley Div.

UNIT PLANT — Bookkeeping machines. The Shaw-Walker Co.

UNITYPER—Units for typing onto mag-

Trade Names Guide

netic tape, used in electronic data processing systems. Remington Rand, Div. of Sperry Rand Corp.

UNIVAC—Electronic data processing systems. Remington Rand, Div. of Sperry Rand Corp.

UNIVERSAL — Tape handling equipment for integrated data processing systems. Cycle Equipment Co.

UNIVERSAL—Payroll calculating systems. Delbridge Calculating Systems, Inc.

UNIVERSAL — Portable typewriter. Underwood Corp.

UNWINDER — Tape handling equipment for "common language" media used in integrated data processing systems. Whiteford Latboratory.

VANGUARD—Dictating and transcribing equipment. Olkon Research Corp. of America.

VERIFAX — Copying equipment derived from photocopying principles but capable of making multiple copies on nonsensitized paper. Eastman Kodak Co.; Photostat Corp.; Recordak Corp.

VERSA-LINER — Diazo copying equipment. Peck & Harvey.

VERTICAL 18—Process camera for making offset plates. Kenro Graphics, Inc.

VERTICAL SPACER—Forms handling accessory used with typewriters. Moore Business Forms, Inc.

VICTORIA — Stencil duplicators. Du Prints, Inc.

VISIRITER — Manual spirit duplicator. Visirecord, Inc.

VISISLEEVE—"Vertical-visible" filing devices for storing punched paper tapes used in integrated data processing systems. Visirecord, Inc.

VISOMATIC — Typewriters. R. C. Allen Business Machines, Inc.

VOCATRON — Intercommunications systems. Vocaline Co. of America, Inc.

VOICE-MASTER — Dictating and transcribing equipment. Magnetic Recording Industries.

VOICEWRITER — Dictating and transcribing equipment. Thomas A. Edison Industries, McGraw-Edison Co.

VOSS—Typewriters and adding machines. American Voss Corp.

WAGE-O-MATIC—Payroll computing systems. Bates Accounting Forms Co.

WALKIE-RECORDALL — Recording and transcribing equipment. Miles Reproducer Co., Inc.

WARREN—Calculating tables, books, etc. Delbridge Calculating Systems, Inc.

WEB-O-PRINT—Addressing and labeling devices. Weber Addressing Machine Co.

WHEELDEX — Mechanized card files. Wheeldex & Simpla Products, Inc.

WHITIN MASTERLITH — Offset duplicator. Photostat Corp.

WINDER—Electric winding equipment for punched paper tape used in integrated data processing systems. Whiteford Laboratory.

WING MAILER — Addressing equipment. Chauncey Wing's Sons.

WIRELESSFONE — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

WIRELESS-TALK — Intercommunications systems. Mark Simpson Mfg. Co., Inc.

WIZARD—Photocopying equipment. Nord Mfg. Corp.

WRIGHT — Spirit duplicators. Hart Mfg. Co.

XEROX—Xerographic copying equipment. The Haloid Co.

X-RAY SORT—Needle sorting system for cards. Le Febure Co.

ZIP-O-RITER — Spirit addressing device. S & M Distributing Co.

ZIP-SORT—Card record systems with addressing facilities. Zip-O-Riter Co., S & M Distributing Co.

ZONALARM—Automatic fire warning and locating systems. Edwards Co., Inc.

Z-LINE—Postal scales. Pelouze Mfg. Co.

Operations Research —

(*From page* 16)

kets. The finished product is new information, and the markets are the various managers, supervisors and other users in the business organization which the office serves.

In these terms, an office is functionally similar to a machine on a production line, and the task of office management involves three problems: (1) determining the market or demand for information — i.e., who is to get what, when; (2) designing a balanced and easily controllable line to produce this information — i.e., allocating the production so that the right group, at the right location produces for the right market, at the right time, and (3) controlling the line on an hour by hour, day by day, month by month basis.

Taken together, these three problems are the basis for systems and procedures studies in the best sense. In many cases of such studies, however, the result has been only a partial solution to the second and third problems involving an installation which produces inadequate or superfluous information in greater quantity, quicker, and at greater cost. Operations research may well be of assistance here, using the approach of determining the relationship between the controllable and uncontrollable variables in terms of a measure of effectiveness. The system would be studied in terms of the three requirements listed, and in terms of the variability of both demand and the production facilities. The operations research scientist and the machine or computer specialist, along with the office manager would develop the best total system to fulfill the requirements — yielding an integrated data processing system which would produce efficiently information for decision-making, in the form required, when required to the persons requiring it. The steps in which information was used to make decisions — for example, receipt of an order leads to a decision as to the necessity for certain kinds of credit analyses—the nature of the information, the methods of achieving the decision, and the consequences of the decision would be examined in order to integrate that part of the information flow efficiently into the entire network.

In summary, operations research is a scientific approach which provides a framework for organizing information which must be brought to bear on a problem through the use of mathematical and logical analyses. It uses mathematics only because it is thus enabled to manipulate quantitative information efficiently. The measure of its success lies in its ability to fit various mathematical techniques to the realities of business situations. For the office manager this means providing him with ability to define the various components of the system he manages in such a way as to advance significantly his ability to deal efficiently with the increasing complexity of modern business technology.

Current Books of Interest

AUTOMATIC COMPUTERS: A SYSTEMS APPROACH FOR BUSINESS, by Ned Chapin. 525 pages. D. Van Nostrand Co., Inc., Princeton, N. J. $8.75.

BETTER BUSINESS COMMUNICATION, by Dennis Murphy. 306 pages. McGraw-Hill Book Co., Inc., New York. $5.75.

BIG BUSINESS AND HUMAN VALUES, by Theodore V. Houser. 103 pages. McGraw-Hill. $3.50.

INSTALLING ELECTRONIC DATA PROCESSING SYSTEMS, by Richard G. Canning. 193 pages. John Wiley & Sons, Inc., New York.

LINEAR PROGRAMMING AND ECONOMIC ANALYSIS, by Dorfman, Samuelson and Solow. 544 pages. McGraw-Hill, $10.

OFFICE SALARIES: A GUIDE TO 1958 SALARY RATES, a survey conducted by the National Office Management Association, Willow Grove, Pa. 36 pages. $25.

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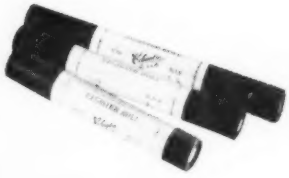

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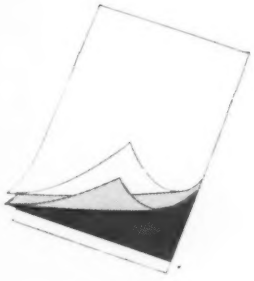

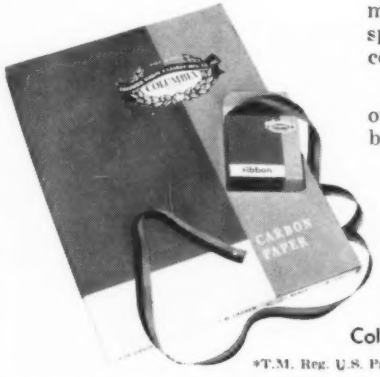

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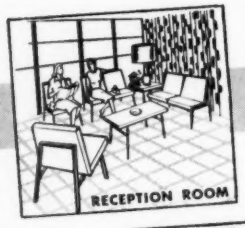

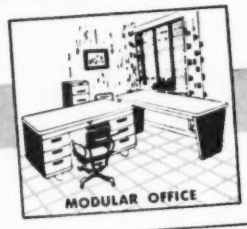

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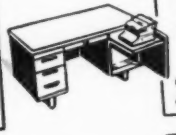

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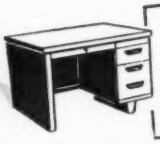

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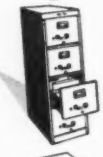

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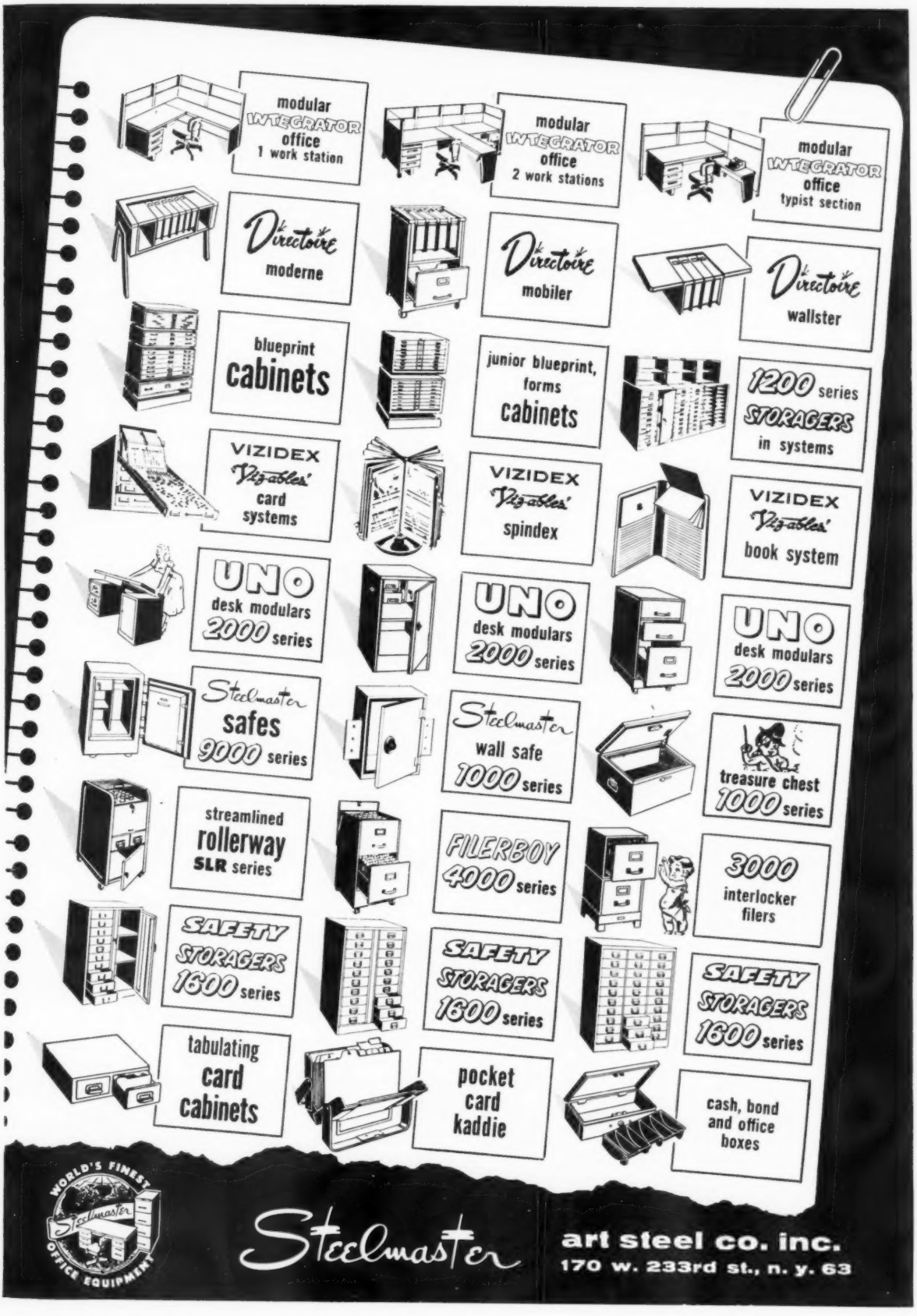
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Newspaper Personnel Relations Association
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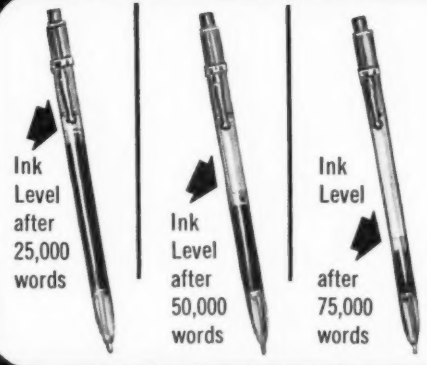

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Preview of 1958 events—

NOMA Seminar. Cleveland, March 17-19.
Sponsor: National Office Management Association. *Place*: Statler Hotel.

CPA Annual Conference. New Haven, Conn., March 19.
Sponsor: Connecticut Personnel Association. *Place*: Strathcona & Woolsey Halls, Yale University.

Annual Business Equipment Show. Toronto, March 20.
Sponsor: Toronto Chapter, Systems and Procedures Association, *Place*: Royal York Hotel.

NICB General Session. Dallas, March 20.
Sponsor: National Industrial Conference Board, Inc. *Place*: Statler-Hilton Hotel.

CIA Southern Regional Conference. Dallas, March 20-22.
Sponsor: Controllers Institute of America. *Place*: Statler-Hilton Hotel.

NOMA Pre-Computer Clinic. Baltimore, March 24-25.
Sponsor: National Office Management Association. *Place*: Lord Baltimore Hotel.

17th Annual SIPA Conference. Durham, N. C., March 26-28.
Sponsor: Southeastern Industrial Personnel Conference. *Place*: Duke University Men's Graduate Center and Washington Duke Hotel.

NOMA Seminar and Business Show. Milwaukee, March 27.
Sponsor: National Office Management Association. *Place*: Marquette University.

Systems and Procedures Conference. San Francisco, March 27.
Sponsor: University of California. *Place*: Fairmont Hotel.

NAA Seminar and Conference. San Francisco, March 27-28.
Sponsor: National Association of Accountants. *Place*: Sheraton - Palace Hotel.

10th Annual NPRA Conference. Detroit, March 27-29.
Sponsor: Newspaper Personnel Relations Association. *Place*: Sheraton-Cadillac Hotel.

NAA Seminar and Conference. Houston, March 31-April 1.
Sponsor: National Association of Accountants. *Place*: Rice Hotel.

APGA Annual Convention. St. Louis, March 31-April 3.
Sponsor: American Personnel & Guidance Association. *Place*: Sheraton-Jefferson Hotel.

NOMA Charles Bury Letter Writing & Communication Clinic. Louisville, Ky., April 2.
Sponsor: National Office Management Association. *Place*: Kentucky State Fair and Exposition Center.

NOMA Pre-Computer Clinic. Atlanta, April 7-8.
Sponsor: National Office Management Association. *Place*: Biltmore Hotel.

6th Annual Suggestion Plans Association Conference. Hollywood, Calif., April 14.
Sponsor: Suggestion Plans Association. *Place*: Hollywood Roosevelt Hotel.

NOMA Pre-Computer Clinic. Houston, April 14-15.
Sponsor: National Office Management Association. *Place*: Rice Hotel.

NOMA Charles Bury Letter Writing Clinic. Saginaw Valley, Mich., April 15.
Sponsor: National Office Management Association. *Place*: Pitt Balcony Playhouse, Saginaw, Mich.

CPMA 39th Pacific Coast Management Conference. Berkeley, Calif., April 15-16.
Sponsor: California Personnel Management Association. *Place*: Claremont Hotel.

RSPA General Meeting. Chicago, April 15-17.
Sponsor: Railway Systems & Procedures Association. *Place*: Morrison Hotel.

16th Annual Industrial Relations Conference. Minneapolis, April 17-18.
Sponsor: Industrial Relations Center, University of Minnesota. *Place*: University of Minnesota.

NAA Regional Conference. Boston, April 18-19.
Sponsor: National Association of Accountants. *Place*: Hotel Statler.

IHC Conference. Atlantic City, N. J., April 19-25.
Sponsor: Industrial Health Conference. *Place*: Convention Hall.

NOMA Methods Clinic. Oakland-East Bay, Calif., April 21-22.
Sponsor: National Office Management Association. *Place*: Hotel Claremont, Oakland.

NOMA Pre-Computer Clinic. Toronto, April 21-22.
Sponsor: National Office Management Association. *Place*: Royal York Hotel.

National Microfilm Association Annual Meeting & Convention. New Orleans, April 21-23.
Sponsor: National Microfilm Association. *Place*: Monteleone Hotel.

21st Annual Tennessee Industrial Personnel Conference. Knoxville, April 24-25.
Sponsor: University of Tennessee. *Place*: Andrew Johnson Hotel.

SAM 13th Management Engineering Conference. New York, April 24-25.
Sponsor: Society for Advancement of Management. *Place*: Hotel Statler.

CIA Midwestern Conference. French Lick, Ind., April 27-29.
Sponsor: Controllers Institute of America. *Place*: French Lick-Sheraton Hotel.

AREA Records Management Conference. White Plains, N. Y., May 2.
Sponsor: Association of Records Executives & Administrators. *Place*: Standard Vacuum Oil Co., Inc.

AIM Annual Presidents Council Conference. New York, May 2.
Sponsor: American Institute of Management.

ASPA 10th Annual Conference. Philadelphia, May 19-21.
Sponsor: American Society for Personnel Administration. *Place*: Benjamin Franklin Hotel.

NOMA 39th International Conference and Annual Office Machinery & Equipment Exposition. Chicago, May 25-28.
Sponsor: National Office Management Association. *Place*: Conrad Hilton Hotel.

Executive Development Seminar. Berkeley, Calif., June 2-27.
Sponsor: University of California. *Place*: Berkeley Campus.

CIA Western Conference. Seattle, June 5-7.
Sponsor: Controllers Institute of America. *Place:* Olympic Hotel.

4th International Automation Exposition & Congress, and 1st Military Automation Exposition. New York, June 9-13.
Sponsor: Richard Rimbach Associates, 845-A Ridge Ave., Pittsburgh 12. *Place*: New York Coliseum

7th Annual Advanced Management Seminar. Seattle, June 15-July 25.
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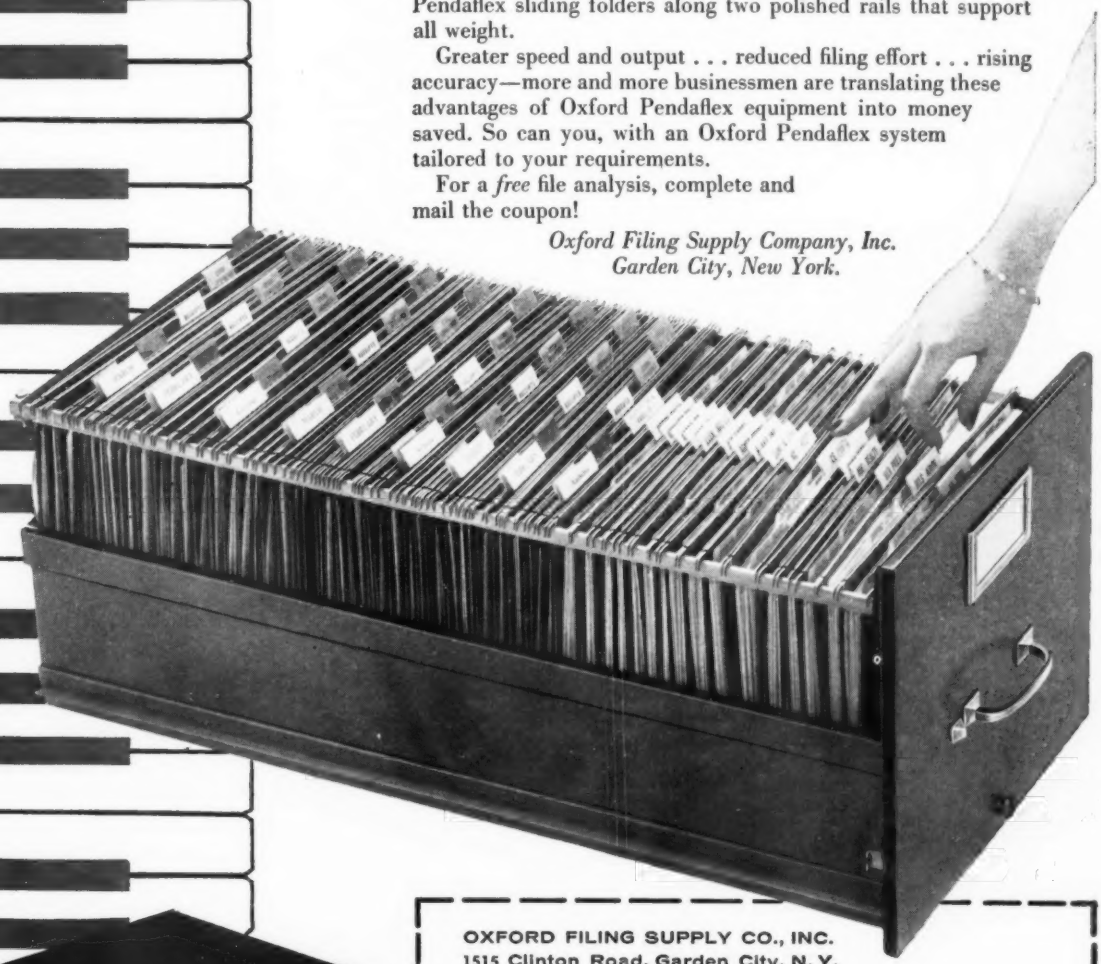

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(*From page* 124)

inar, University of Washington. *Place*: University of Washington.

9th Annual Executive Policy Conference. Philadelphia, June 16-27.
Sponsor: Wharton School of Finance & Commerce, University of Pennsylvannia. *Place*: Wharton School of Finance & Commerce.

9th Annual Wharton Refresher Conference. Philadelphia, June 16-27.
Sponsor: Wharton School of Finance & Commerce, University of Pennsylvania. *Place*: Wharton School of Finance & Commerce.

NMAA 7th Annual Conference. Atlantic City, N. J., June 18-20.
Sponsor: National Machine Accountants Association.

NAA Annual Conference. Chicago, June 22-26.
Sponsor: National Association of Accountants. *Place*: Conrad Hilton Hotel.

Management Development Center 1958 Summer Conferences (11th Series). Pasadena, Calif., June 22-27.
Sponsor: Management Development Center, California Institute of Technology. *Place*: California Institute of Technology.

AIEE Summer General Meeting. Buffalo, N. Y. June 22-27.
Sponsor: American Institute of Electrical Engineers.

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2nd Annual Advanced Business Systems Conference. Philadelphia, July 7-18.
Sponsor: Wharton School of Finance & Commerce, University of Pennsylvania. *Place*: Wharton School of Finance & Commerce.

NSA International Convention. Minneapolis, July 16-19.
Sponsor: National Secretaries Association (International).

AIEE Pacific General Meeting. Sacramento, Calif., August 19-22.
Sponsor: American Institute of Electrical Engineers.

Management Development Center 1958 Summer Conferences (12th Series). Pasadena, Calif. September 7-19.
Sponsor: Management Development Center, California Institute of Technology. *Place*: California Institute of Technology.

NIGP 13th Annual Conference and Products Exhibit. Boston, October 5-8.
Sponsor: National Institute of Governmental Purchasing. *Place:* Hotel Statler.

NOMA Regional Conference & Exposition. Denver, October 5-8.
Sponsor: National Office Management Association. *Place:* Cosmopolitan Hotel.

RSPA General Meeting. Chicago, October 7-9.
Sponsor: Railway Systems & Procedures Association. *Place*: Morrison Hotel.

NOMA Business Show. Rochester, October 7-9.
Sponsor: National Office Management Association. *Place.* Chamber of Commerce Bldg.

AICPA Annual Meeting. Detroit, October 11-16.
Sponsor: American Institute of Certified Public Accountants.

SPA International Systems Meeting. Pittsburgh, October 13-15.
Sponsor: Systems & Procedures Association of America. *Place:* Sheraton Penn Hotel.

NOMA Conference (Area) and Business Show. Montreal, October 14-19.
Sponsor: National Office Management Association. *Place*: Queen Elizabeth Hotel.

IMS 5th Annual International Meeting. Philadelphia, October 16-17.
Sponsor: Institute of Management Sciences. *Place*: Sheraton Hotel.

(*To page* 128)

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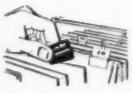

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(*From page* 126)

CIA Annual National Conference. Atlantic City, N. J., October 19-22.
Sponsor: Controllers Institute of America. *Place*: Chalfonte-Haddon Hall.

NMA 35th National Conference. Los Angeles, October 23-25.
Sponsor: National Management Association. *Place*: Hotel Statler.

AIEE Fall General Meeting. Pittsburgh, October 26-31.
Sponsor: American Institute of Electrical Engineers.

National Time & Motion Study and Management Clinic. Chicago, November 5-7.
Sponsor: Industrial Management Society. *Place*: Hotel Sherman.

NOMA Business Show. Fort Wayne, November 12-13.
Sponsor: National Office Management Association. *Place*: War Memorial Coliseum.

FGAA 8th Annual Symposium. Washington, D. C., November 17-18.
Sponsor: Federal Government Accountants Association. *Place*: Shoreham Hotel.

Automation —

(*From page* 13)

Here almost the entire answer depends on the business situation. When business is slow—slower than is normal or was ever anticipated—the flexibility of human judgment must be called on more often in every situation. Suppose our automated inventory control procedure exists in a company which has high inventory stocks, low sales for the preceding six weeks. Perhaps according to the formula, all production should be shut down for two weeks. And perhaps in the company's particular situation at this particular time, this is the one thing that is necessary to precipitate a disastrous and crippling strike. Or perhaps the company for reasons of its own traditions and policies is determined not to shut down production completely at any one time even if it has to go on a shorter work week over a period of time. In the last analysis in a rapidly changing situation, in which one rule may apply one day, another the next, formulae are dangerous; generally understood operating principles are best; and programmed decision-making may be fatal.

Thus, if the recession should continue, grow more severe, or at least leave soft spots in certain sectors of the economy, the immediate future of automation on the feedback level looks dubious.. Balancing many varying factors in a rapidly shifting situation will always be a job for humans rather than for a machine, which has a limited range of decisions, all of which are based on precisely stated situations reduced to the smallest possible number of significant factors.

If things should revert to either another period of solid expansion or at least of relatively high prosperity in the immediate future? Then, we may expect to see more companies driving toward this final degree of automation—provided that it is appropriate for them. It will never be appropriate for some companies simply because their business is not so complex or based on such a long sequence of events that feedback and control mechanisms are necessary. A publisher, for instance, can tell whether or not a second printing of the third title on his spring list is indicated by relatively simple reports from the sales department. A radio manufacturer, who must combine a variety of

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parts into a finished product, and keep certain inventories of all those parts, each of which might take a different lead time to manufacture, could very well find such an automated procedure invaluable.

The stumbling block here again is cost. Would such automation in its true sense benefit the manufacturer enough to cover the costs of the electronic data processor which could achieve it for him?

It could and can if one trend (or at least arrangement that seems to be working) that has shown up recently attracts more companies: the joint sharing of a computer by a number of companies, where all can make use of it, but where none can justify purchase or rental of a computer on its own. This has been done notably by a group of four insurance companies in Hartford, the SPAN group, and may offer extremely good possibilities to other industries in which processing speed, and quick changes in production schedules can mean the difference between a successful and unsuccessful year.

Such an industry, for example, might be the women's clothing industry where most firms are small, but offer a variety of different sales models.

Such cooperative arrangements obviously offer all kinds of difficulties in the way of protecting operating information from competing companies. But, if in an industry of many small firms, each of which shares a common need for quick processing of information and for action based on that information, some impartial industry-sponsored center could be set up to process member firms' figures, a large new field for electronic applications might be opened in the relatively near future.

But so far, little has been done with such cooperative pooling efforts. So the story at the moment remains one of a complete change of heart on the part of many small and medium sized firms which were confidently looking forward to an eventual computer installation a year or so ago, and of sober second thoughts on the whole subject among many large concerns. The pace of computer installations will undoubtedly pick up again, once the present mood of doubt and uncertainty about the business scene ends, but it seems likely that the day when companies sought "hardware" for its own sake is definitely past. From now on, they're going to have to be shown that they need it.

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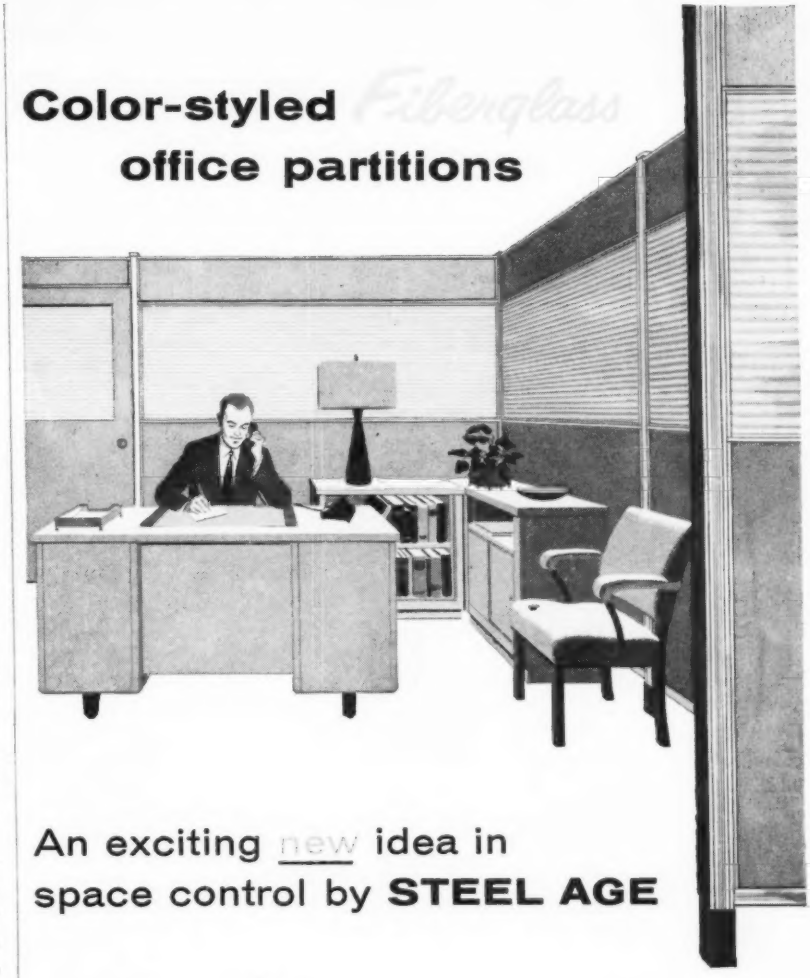

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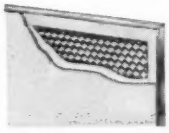

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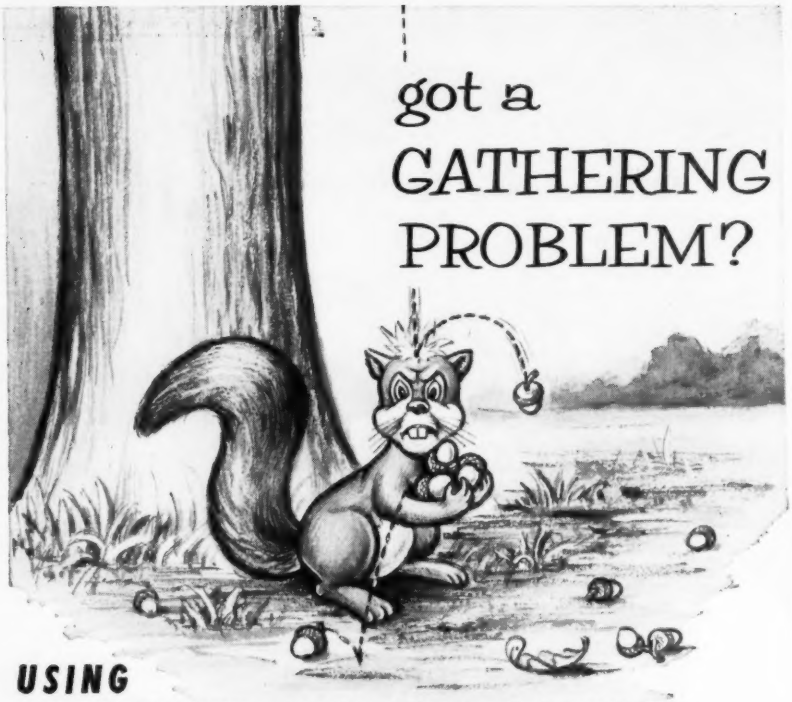

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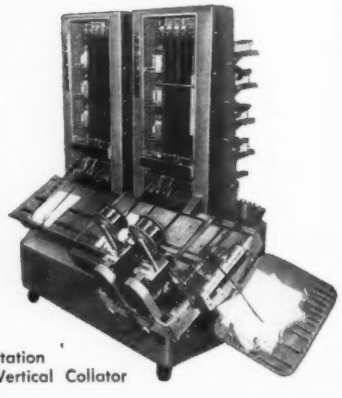
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Personnel —

(*From page* 19)

ating expenses has come even a more careful consideration of "emergency" measures than was true a year ago, for entirely different reasons. More and more companies have established the possibility of employing part-time workers for peak-load periods, keeping a minimum permanent staff to handle the ordinary day-by-day routine. Other companies are experimenting with "batching", a system of scheduling almost all routine clerical work for relatively untrained part-time workers. All work is broken down into short sequences of simple steps, and the part-time workers function as a group, all performing the same steps at the same time, until that particular phase in the processing cycle has been completed.

No clerical surplus yet

Such systems as these offer obvious advantages for the office that is still having difficulty finding personnel, since part-time workers, especially if no advanced clerical skills are required, are still far easier to find than full time clerical workers. They offer equal advantages for offices that are feeling the current economic pinch, don't want to fire any workers, but don't want to hire any additional permanent personnel either.

This is the situation at this time. It is more a state of suspension, of a slowing of trends that have existed in the past few years than a reversal, in any sense, of those trends. Whether the slowdown continues, or whether we return to last year's frantic hiring pace depends to a very large degree, of course, on how soon the current recession ends, and whether it leads into another period of booming expansion, or one of relatively prosperous stability.

Whatever happens, though, there are good reasons to believe that the worst days of the personnel shortages we have faced in the past are over for a good, long time. The growing knowledge of how to employ part-time workers successfully is expanding a rich and experienced labor market for the office. The fact of a constantly growing population group in the 65 and over category is already putting social and economic pressure on our adherence to compulsory retirement at 65, and will eventually almost certainly push that

retirement age back. And the "war babies" that have been bursting the seams of our schools will begin moving *en masse* into the labor market within the foreseeable future. Children born in the early war years will be graduating from high schools within the next two years; the great boom in births that occurred in the late 'forties will register on the employment markets within the next ten years.

More women to stay at work

Two other factors may play a part in extending the dimensions of the labor market. One is that the growing divergence between the survival rate of men and women, at all age levels, is going to mean an increasing number of women will remain unmarried, and so presumably will stay at their jobs. It was pointed out last year that women could be an excellent source of executive material for the companies that were at the time searching desperately for such talent, but were limiting applications to men only. It seems probable that if an increasing number of women do remain unmarried and do work for most of their lives, the pressures to open more responsible jobs to them will grow too heavy to resist.

The other factor is a much more subtle one, but it is beginning to look as though it may be a significant one. It stems from a barely visible change that seems to be appearing in our economic and social values: a change that is certainly not attributable to the recession. As a matter of fact, to some degree, the recession might be charged to the change. A great many people seem to have been going through some profound psychological and material changes in their thinking habits in the past few years—at least in terms of what they think they need.

A survey taken by the Department of Agriculture shows that the consumer in 1956 was spending more on food and clothing than in 1950, less on furniture, household equipment, and automobiles. A theory is gaining favor that, since the consumer has been living for several years—since the postwar period specifically—amidst plenty, he is reaching a point of satiety. And planned obsolescence doesn't seem to be taking up the slack. Moreover, a reversal of mood seems to be manifesting itself in other ways. Bearing this out, perhaps, is the small but significant change that is

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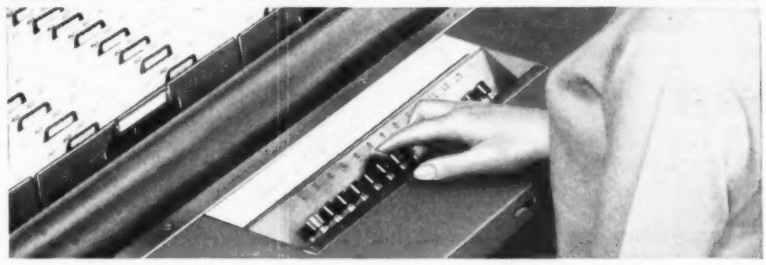

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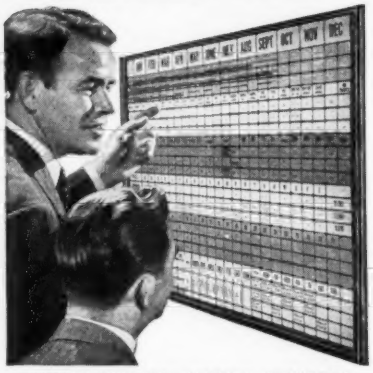

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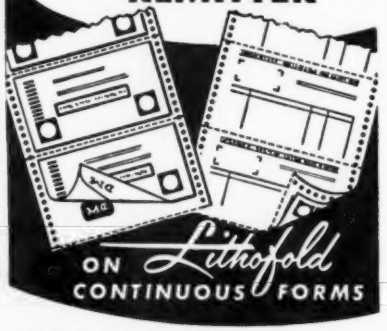

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now taking place in the home-owner. A small but steady trickle of suburban home-owners have been leaving their rural surroundings recently to take up residence again in the city. Even more significant, an increasing number of young couples with children who would have been automatic candidates for the suburbs a few years ago are now remaining in the city, with every intention of raising their children there.

Why? Not because city rentals are lower, certainly. Couples with growing children take relatively large apartments in the best neighborhoods they can afford. Not because city school systems are now offering advantages they did not offer a few years ago when the great trek to the suburbs was in full swing.

Satiation, perhaps, on a different level? Part of the growing popular determination not to be a slave of "conformism?" Nobody knows. What is known is that many of the same "pacesetter" type of group that first launched the migration to the suburbs now definitely are clinging to the city. And, what leaders do, others imitate.

Possible effects on the office

What has all this to do with the office? Two things mainly. If a substantial number of the middle and upper income families that formerly went to the suburbs as automatically after the first baby as lemmings to the sea, now begin to elect to live in the city and raise their children there, it will have an immediate effect on both the quality and quantity of female office help available. The suburban housewife, even after her children have entered school, is on a constant treadmill of activity. She is the family chauffeur, for both husband and children, and very often, for domestic help as well. Shopping is a project that demands getting the car out again. And, since she and her family live in a world where recreation is based largely on a closely-knit social group, she has a great many more community and social obligations than she might herself want. Moreover, she has a house to take care of.

If this same woman lives in the city, the entire picture is reversed. She will probably live in an apartment, which since it is smaller, simply will not take so many hours out of her day as the house in the country. Her husband will be able to get to his own job without transportation assistance from her, and her children will be able to get to their schools unaided. Her social obligations will be exactly as great or as small as she chooses to make them.

Such a woman is a candidate for a job, once her children are of school age.

It may be only a part-time job, but the companies that have experimented with using workers on a short but regular working day basis have had good results with the system.

Equally significant in the total personnel picture, if city living begins to revive significantly among the same social and economic groups which have since the war been prime movers in the flight to the suburbs, may be the effect on the man of the house. As was pointed out in last year's report on the personnel picture, many men, marrying young, and within a few years taking on major fixed financial responsibilities, have had business caution almost imposed on them by circumstances. Ambitions may be delayed or even foregone by a need for security, the weight of a twenty-year mortgage, the tyranny of time payments on a variety of possessions. Moving back to the city, or never leaving it in the first place, does not, of course, eliminate responsibilities, does not mean that security is forgotten. But the simple fact is that the average city family is more flexible, less burdened by possessions and the constant need to acquire new possessions than its counterpart of the same income level in the suburbs. And to the degree that it is freer of fixed and continuing financial responsibilities, its breadwinner is more free to take the longer chance, the job that may not be as safe as the present one, but is a lot more interesting, and, if all goes well, a lot more promising. He can be more ambitious because he can afford to be more ambitious.

He could be, perhaps more easily than in the past, the type of dynamic and decisive executive material that top management is always searching for.

Systems planning —

(*From page* 26)

was inevitably being extended to include not only sales accounting and statistics, but finished goods inventory control as well.

Finally, the recommendations ended on a point of philosophy: rather than concentrating on savings as such, attention should be given first to *improving*

operations. The reasons behind this recommendation fell into two categories: (a) if they were really needed, significant savings could be realized by making a few, well-chosen management decisions — savings which at one stroke could far exceed the direct savings which most systems projects could provide immediately; and (b) by pressing on with the projects in major operating systems, a systems department could do its best work by helping to ready the company for *any* economic weather. In effect, by providing really good systems for the future, a systems department could capitalize on fundamental savings, which would be multiplied many times over in the years to come. In criticizing the attempt to sweep up little savings, one manager commented: "This isn't the sort of time when changing to window envelopes will help very much."

Laced through each of these recommendations were a number of comments which couldn't be phrased as specific guidelines for systems management. One, in particular, was voiced most heavily by the men who had been working for two years or more on computers and major integration programs: management simply has to make up its mind that some of these jobs take time, and that changing the course or the rules of the game before the project is finished will be terrifically expensive, and may jeopardize the possibilities of eventual success in the project at all. Patience to follow out original planning decisions doesn't mean holding blindly to badly-conceived programs of mechanization or change; but it does mean not tinkering with the basic system until it has been brought into operation, when the suggested changes can be checked fully for their effect through the system as a whole.

Inadequate planning disastrous

Another also referred to management patience: patience to take the time needed to think out where it wants to go, or has to get to, on a specific systems change, and then to plan adequately for it. The horror-stories of the "seminar" all seemed to trace back to inadequate or incomplete planning in the early stages of a major integration program. Most of the inadequacies had this in common: the direct changes which managements said they wanted were not being examined thoroughly *by management* for implications further out in the system, despite systems department warnings. A number of the resounding failures of mechanizations, and most of the serious installation-delays, could have been avoided if the organizational, procedural, and political consequences of the recommended systems changes had been fully appreciated at the outset by managements which had given a go-ahead for the hardware.

Two managers pointed to another factor associated with the exceptionally rapid growth of their companies: the crippling effect on systems work of managers who were tormented by their nostalgia for the old, smaller, simpler, easier-to-run company. "Some of them," said one of the systems men, "just haven't been able to accept the growth that has actually taken place. They somehow can't believe it, and can't seem to step across the line into their new weight-class. The way they phrase their doubts about our systems recommendations is heart-breaking. I think they'll work out of it in time, but not if they take a bad licking in their first couple of bouts with the bigger competition."

A final point came from a systems manager who had installed a large computer, and had seen the possibilities of

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real achievement blunted by management hesitation in carrying through to reap the full fruits of the decisions it had already made. He said, "They were ready for some real clean-up work, but not really ready to use the computer. If I were doing it again, I think I'd go through the feasibility study and the systems improvements, and then bribe the company chief engineer to say that the floor could never be braced to hold the equipment. If we could have done the systems work, and then not had to take the machines in after all, we probably wouldn't need them for a number of years to come. As it is, the systems clean-up is paying off far better than we'd hoped. The computer couldn't be justified, if we measured from the point we've reached now.

"What I'm saying is this: pay attention to the basic work of the system. If your management can really help you clean that up, I'll bet that it will be able to do without the fancy hardware. If you do find that you need it, you'll have a much easier time getting it in, and maybe you'll be able to see it used the way it was designed to be used."

Paperwork processing —

(*From page* 28)

something that will involve almost as much expense and upheaval as major systems changes? Not at all. It can be done by a regular scrutiny of the end results of present paperwork procedures, and comparison of these results with certain known standards. If present procedures are giving results close to or better than the standards, then obviously not too much is wrong with the procedures by which those results are obtained. If on the other hand, there is a wide divergence between accepted or reasonable standards, and actual results, then some backtracking is indicated to find the reason for the discrepancy.

And no matter how good things may look on the surface, a month by month check of results and trends in the entire paperwork processing sequence will almost immediately show areas for improvement in companies that have not had such constant checks in the past. It would be a very rare company that did not have quite complete and accurate production line statistics instantly available. As most companies actually produce more pieces of paper than units of their saleable commodity, it makes just as much sense for a company to watch its paperwork load, and evaluate the amount of people, space and equipment devoted to each part of that load against the actual number of paperwork units being processed.

And it can be done by relatively simple measures which will at least indicate trouble areas. An individual company may not be able to do too much about cleaning up some of the more complicated trouble spots that show up; it may have to call in outside help here. But in many instances, it can, by keeping scrupulous records, and analyzing them intelligently, identify and eliminate many weak spots itself.

Just as an indication of how operations that look well planned and efficiently organized on the surface can actually be a source of profit leaks, here are some of the situations which we have run into with client companies:

A Large Oil Company. A forms control program was installed over 15 years ago. Today one person could easily carry the workload distributed among three people in the department. The forms program is costing more in salaries than is being saved through reduction in printing costs. The control function has slipped away from the department which now merely designs a "pretty" form in answer to all requests.

A Service Company. A decision was made to re-equip the accounts payable

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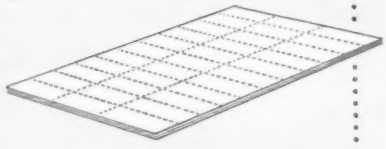

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department with tabulating equipment. The department billed 25,000 accounts on a monthly basis. Before the equipment was delivered, fortunately, a "second look" proved that the current manually paced operation was less expensive. Still greater savings were obtained by instituting procedural changes and switching to a cycle billing method. The new equipment purchase order ($60,000) was cancelled.

A Manufacturing Company. Records were piling up in both offices and storage areas in spite of the installation of a retention schedule five years earlier. Measurement and analysis revealed that the retention schedule was unworkable because it was too detailed. In addition, department heads were reluctant to transfer inactive records to storage. The "service concept" was lacking.

A Consumer Goods Manufacturer. The order-shipping-billing cycle had been overhauled several times in the last five years until finally the latest model computor was installed. The machine-paced system inherited many cumbersome paperwork processing steps causing new time lags and bottlenecks. A post-installation check-up found that the computor was operating effectively but that the flow of paperwork and data were not under assembly-line control. Exception processing loomed large as the data processing bogey — too many documents were being diverted for special handling (credit checks, special shipping instructions, etc.)

An Aircraft Manufacturer. A paperwork reduction committee performed for several years and issued impressive statements of accomplishment. A second look revealed that the committee was bogged down in long meetings, was not keeping up with the backlog of review, lacked detailed analysis data for effective decisions, and had not even gotten to a review of the multitude of new forms, reports and procedures.

A Sales Organization. New paperwork procedures were installed to speed up processing of orders, sales statistics and commission payments. Cost reduction was accomplished and time lags eliminated in the accounting function. A work count report revealed a subsequent drop in the volume of orders and call reports. The new system had hopelessly ensnarled the salesmen in paperwork red tape. Fewer sales calls were being made as salesmen wasted

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Now, how would a modern company, faced with a realization that the intelligent way to cut costs is to clean up wasteful operations, rather than simply start slashing, go about checking its paperwork procedures for inefficiency and extravagance? A simple statement that actual work accomplished should be measured against standards is not helpful in itself. How does one do it? How does one continue checking? How often? And what standards are meant?

Actually, the standards implied are not the familiar time-motion study type, although they are based on them. Rather, they are usually ratios — so much work is being put through a department; so much work to be accomplished in such and such a time should usually require this number of workers, this amount of equipment. If figures in a company show a great divergence from the indicated staff and equipment as suggested by these ratios, then an investigation is in order.

The way we have organized such a checking process in client companies is through two periodic checklists, which must be filled out by supervisors in each of the departments in the paperwork processing line. One is completed on a monthly basis: one semi-annually. Through such simple questionnaires, management can not only spot trouble as it begins developing; it can also guard against overspending on its own part based on unjustified expectations of growth in volume.

This may seem a cumbersome device, creating more trouble than it is worth. A moment's reflection will show that it could have unexpectedly valuable results, though. Let's consider the reverse situation, the chaos that would result in another situation where such reports are accepted as a matter of course if those reports were suddenly eliminated.

The Army Game works

No army in the world achieves its greatest distinction through its paperwork efficiency, but in one area, every army is a model of efficiency: its picture of its total available manpower each day. At dawn, each day, in every company street all over the various parts of the world the army units may be stationed, there is a roll call. The fact that of a given company so many men are sick, so many on duty, so many AWOL goes on that company's morning report, which goes on to battalion, and thence eventually to the central headquarters. Rough and simple as the system is, it is a check, and an extremely reliable one, on what is perhaps the most vital information an army has; its total strength at any given time.

Now, suppose a different system were used. Let's assume a given company with a negligent commander has an unusually high percentage of men out sick each day, and an equally high percentage of AWOLs. Without some such simple reporting system as the army uses, how long would it take before higher officers — the middle management level — at battalion or divisional headquarters would spot some trouble in the given company and start an investigation to see what was wrong?

Actually, any business, even though it is not run on the rigid lines of an army, and allows each person or worker more flexibility, follows the same chain of command principles as an army. Yet how can a commander evaluate the efficiency of his operations and his subordinates unless he has some picture of that efficiency in terms, not just of results, but of comparative effort to gain those results?

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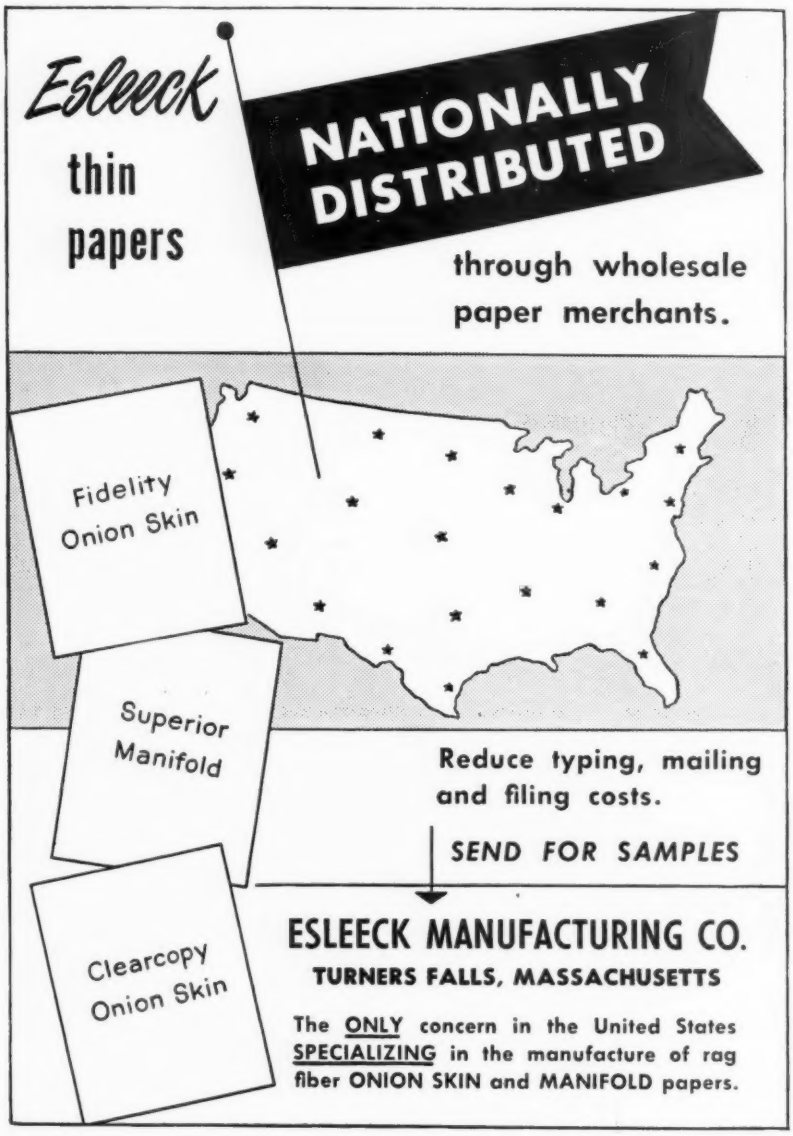

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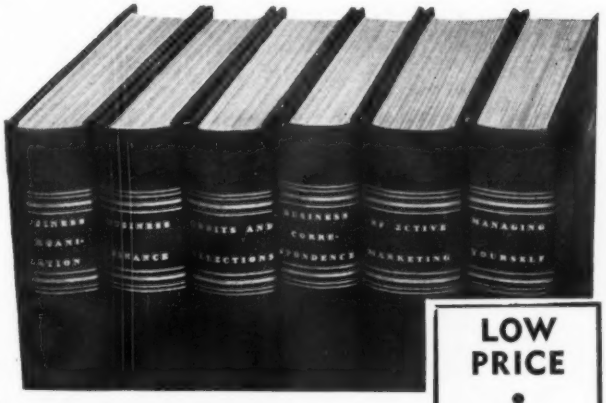

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and gets them through with a high degree of accuracy is still not efficient if there are twice as many people on the line as are necessary. So quality of work, and general satisfaction with the work done are no guarantee that all is well.

The type of checklist we suggest is a guarantee, that, if something is not well, management will learn about it in short order. Among the advantages it offers management are:

1. It allows management not only to catch bad operations, but to measure the month-by-month improvement —or lack of it—in a situation where corrective action has been taken.

2. It gives management a realistic basis for intelligent decisions on additions or reductions, in space, equipment and staff.

3. It gives management a chance to see how thoroughly and willingly lower working levels are applying new program ideas that have been specified for them.

4. It provides a workable basis for budget planning, and the best possible defense against attacks on proposed budgets.

5. It helps management make businesslike and unbiased evaluations of the quality of its first line supervision.

6. It provides a basis for both short and long term company planning.

7. It measures the worth of each new program as it is put into effect.

But the checklist principle has equal values for supervisors, too. Among these:

1. It insures to the supervisor that no parts of the program for which he is responsible are being overlooked.

2. It measures and documents improvements that the supervisor has created and installed.

3. It is documentation for the supervisors' reports to management of workload and workload changes.

4. It documents the supervisors' request for additional space, equipment, or personnel when they are needed.

5. It indicates to the supervisor himself those areas where he can save the company the greatest amount of money by instituting improvements. It gives him a priority list of improvement projects, in other words.

Now the principles of periodic measurements against a checklist can be applied to almost every paperwork processing area. In addition, we have been able to use the technique, and achieve impressive results in lowered cost, and improved operation even in the so-called "paperwork control programs" themselves. These include:

Filing Operations
Quality Improvement Programs
Forms Control
Reports Elimination
Correspondence Management
Work simplification
Microfilming
Vital Records Protection
Records Retention & Destruction
Records Storage
Systems and Procedures

To make the whole idea more concrete, let's see just how a checklist program might be established in one of these areas: Records Storage, for instance.

Records center is a term which refers to a particular *system* of records storage. It is *not* a particular type of equipment, or supplies, as is sometimes casually implied. The *methods* used are the key to the phenomenal rise of the records center concept.

We illustrate this particular paperwork area because:

1. It is usually simple for an organ-

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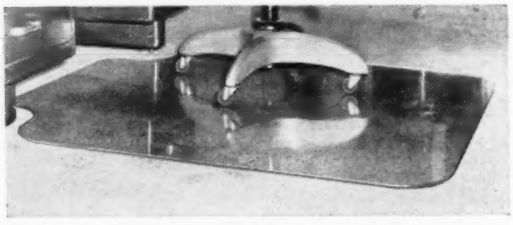

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ization, working on its own, to gather measurable statistics in this area, even if there is no formal reporting system yet in existence.

2. Interest in the whole area of records centers and the best way to maintain them is constantly growing.

3. Many organizations have only a minimum or even no program at all in this area, so use of the records center as the example in this article may help them organize it on the best possible principles, when they do set up such a center.

4. Many organizations have no clear cut conception of the potential savings that may be achieved in a records center provided it is established correctly to start with.

Now, if a professional analyst were to come into your company for the specific purpose of evaluating your records center activity, there are a variety of things he would do. Many of them an office can do on its own, even though there will always be some areas where a full time analyst, either on the company staff, or an outside consultant, will be needed.

Specifically, let's see what either a consultant or management could do after instituting the checklist we have discussed. The checklist for use on a monthly basis carries these items requiring answers:

Record volume at the start of the month covered in the report, in number of cubic feet
- Volume accessioned
- Volume disposed
- Record volume at the end of the month covered
- Net increase or decrease in total cubic feet devoted to records
- Unassigned capacity in the records center
- Total number of references received during the month
- References by 'phone
- References by writing
- References by visit
- Requests answered by phone
- By copy
- By visit
- By charge-out
- Number of requests not answerable
- Number of units of material filed during month
- Interfiles
- Refiles
- Paid man-hours in center during month
- Percentage of personnel time spent accessioning records
- Percentage of time spent referencing them
- Percentage of time spent disposing of them

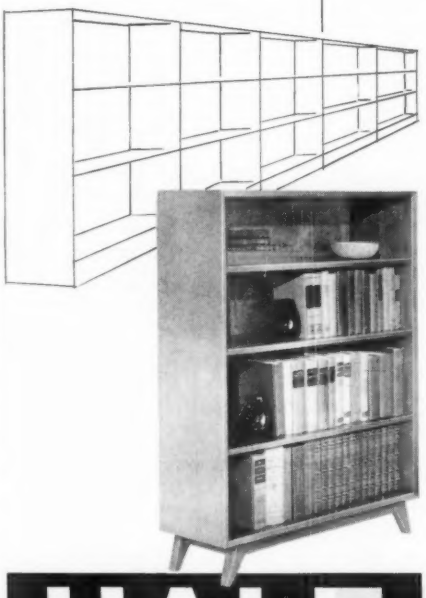
These categories are listed down the left-hand column of the Monthly Activity Report. Subsequent vertical columns are provided for every month of the year, so as the year progresses a very clear and simple picture of the basic activities of the records center, and any changes either in emphasis among those activities, or total volume of work in all of them, emerges.

Now, this chart, as it is filled out over the months, will immediately flag some things for management's attention, if management will just analyze each category of information as it comes through. Specifically, it will show:

- Trends in records center activity
- Seasonal variations in activity, and category of activity
- Sudden changes of trend
- Unusual deviations from past figures

Such information will allow management, almost on an automatic basis, to:

for the man who WANTS everything



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1. Note when there is some unexplained change from past figures, and move in to establish the reasons and consequences of the change, and take corrective action if necessary.

2. Predict figures for each item for six months in the future.

3. Compare predicted change results with actual change results as a check on the accuracy of its own predictions.

4. Compute the ratio of total costs of operations to total number of references over a long enough period of time to give true figures.

5. Compare the ratio found by this computation against the following generally established averages, and take appropriate action if costs are out of line.

Cost per reference: Fifty cents to $1.50. *What it indicates*: The records center is operating smoothly, efficiently, and economically, providing quality of service is satisfactory. It is a good operation.

Cost per reference: $1.50 to $2.50. *What it indicates*: The operation is still within good limits, *if* the records center program is less than three years old. If the center has been in existence three years or more, the figures are too high.

Cost per reference: Over $2.50. *What it indicates*: Program needs immediate investigation, and probably a complete overhaul.

While the monthly check list gives a working picture of the month by month condition, work load, and operating costs of the records center, the semi-annual check list provides a much more comprehensive examination. Questions to be answered "Yes" or "No" by the records center supervisor are:

1. Are retention schedules published and correct?

2. Are all items in the records center covered by schedules?

3. Are all records scheduled for transfer at this time actually transferred to the records center?

4. Are all records scheduled for destruction from offices destroyed, and an appropriate record made?

5. Are all records scheduled for destruction from the records center destroyed and recorded?

6. Are all records center index cards completely posted and accurate to date?

7. Is the space control chart complete and accurate to date?

8. Are retention periods revised only by a new and properly signed authorization card?

9. Will records center space be enough for the next six months?

10. Will present records center personnel be enough for the next six months?

11. Will present equipment be enough for the next six months?

12. Will the present supply of boxes be enough for the next six months?

13. Is the records center physically neat and clean?

14. Has a reference tally for each series in the records center been maintained?

15. Are as many references as possible answered by phone?

16. Are all returned charge-outs filed?

17. Are all interfiles filed?

18. Is a charge-out or other card used to mark the positions from which items are removed from reference?

19. Are charge-outs followed up on a regular two-week day basis?

20. Have all items lost during charge-out been replaced by duplicate material or a "permanent" charge-out?

21. Have all items returned from the records center to offices to be incorporated in current files been replaced by "permanent" charge-outs?

In addition, the semi-annual report requires the records center supervisor to indicate the number of sections in the organization which have material filed in the records center, the num-

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ber without such material, certain predictions about future supplies needed, an estimate of how much time will be needed before additional capacity is required, and other general questions of this type. The semi-annual report thus operates as a quality check on the work being done in the records center, just as the monthly report operates as a quantity and cost check. Moreover, by specifying the number of organizational groups that do not have material on file in the records center, it furnishes management with a lead to those officials who never want to see a record leave their own department.

The semi-annual check list also incorporates a section in which the supervisor is required to state against the same check list used in the monthly reports what his budget allowed for each category of work during the past six months, what actual figures have been, and the difference, plus or minus, between budget figures and true figures. He is also asked to give an estimated budget figure for each category of work for the coming six months.

The benefits that will almost immediately stem from such a checking system are obvious. The difficulties of keeping it are very minor. Actually, it only represents a consolidated tabulation and comparison of figures that should be on hand already in any properly organized records center. By the same token, a similar regular checking report on a periodic basis in almost any paperwork area can be created and maintained, although in other areas it may mean gathering figures not now compiled. But even when this is necessary, the tightening effect of regular checks on every paperwork operation, and the clear picture such checks give management of any trouble spots will repay in direct dollar savings the extra work involved in gathering figures and preparing the reports.

Management —

(*From page* 22)

ment inhibited by the existence of company-wide formal programs? Social scientists who have examined large-scale organizations report that there is a tendency to transform the procedures into purposes or to confuse ends and means. I think at one time we have all witnessed at first hand a worship of our own administrative artifacts. Our methods and procedures colleagues often comment that this devotion to procedures of our own invention makes it very difficult to introduce new and better ones. How many of us were ever sent to courses we did not need simply because the Training Department needed students? When we create programs to train managers do we not concurrently create a continuous demand for an audience? I am not suggesting that this tendency is "right" or "wrong"; it is an observable condition of life in large-scale organizations. When faced with many small and apparently similar problems, don't we often tend to lump them together and program a search for one solution? I suggest that when we do this, we innocently violate the dictates of our own right reason.

The AMA study quoted previously indicated that in addition to the 54 per cent of responding companies having formal plans, programs, or methods, another 21 per cent disclaim formal programs but have fixed responsibility within their organizations for management development. The experiences of this latter group in contrast to the former should be significant.

Let me sum up this point: I believe there is a moderate to strong tendency now to lose sight of our ultimate aim — the development of the *individual*

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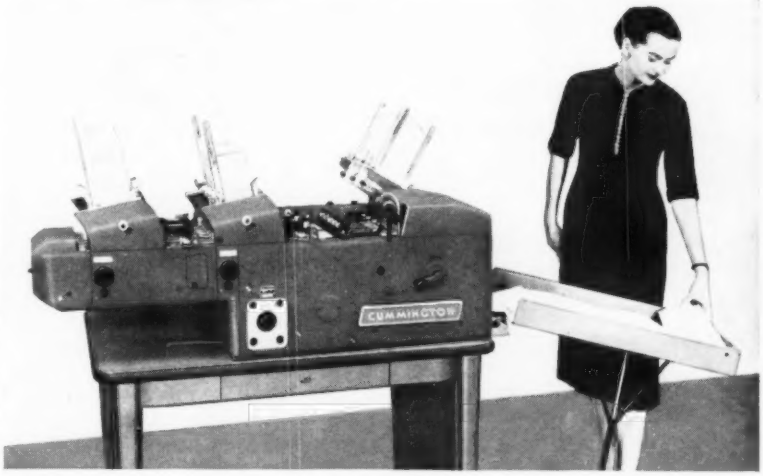

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I am sure we would all like to know more about individual behavior in organizations. And we are learning more daily due, in the main, to the fine work of universities and private and public research organizations supported by grants from business and industry. But I wonder whether, in some important instances, we are using present knowledge to best advantage?

Conditions for individual growth

We are all in agreement that an individual manager—assuming he has the capacity—will probably develop inside our organization in the way we desire if these general conditions are met:

1. He has personal objectives that are specific, understandable, attainable, relevant, and organizationally acceptable.
2. A means or method exists for him to achieve his objectives.
3. The satisfactory use of available means or methods make the achievement of his goal possible.
4. The attainment of his goal is rewarded.

Let's consider a hypothetical case: Joe Adams, a manager, and his superior agree that Joe can and should, through study, be able to write more meaningful reports. Further, if Joe learned how to do this he could do a better all-around job. Both Joe and the company (speaking through his supervisor) agree that this is his goal (perhaps one of several) and they will help him achieve it.

Let us also say that there is a course at a local university which provides the needed training. Joe enrolls in the course. As his instruction progresses, he finds that his superior gives him an increasing number of reports to write. Joe discovers that the more reports he has to write, the better job he does. His supervisor also encourages him to broaden the use of his new-found talent.

Joe finds that, by the time he has completed the course, his superior has gradually increased his responsibility and further, that he is able to accomplish his work more effectively. Also, his superior has let Joe's accomplishment be known up the organizational line. We may sum up Joe's rewards by saying that he has an increased sense of personal accomplishment that has been actively recognized by his company in its use of his skill in his present job.

(Assuming there is no prior commitment, it is unnecessary and even undesirable, at this point, to promote Joe or to increase his salary. The training was to satisfy a mutually identified need that would enable him to do the job *he is paid for* more effectively. However, Joe should be aware that his superior and the company are mindful of his accomplishment and will consider it when promotion or salary increase becomes possible. Reward of any kind must closely follow accomplishment. (Please note that if every improvement in performance must be recognized monetarily, we will soon be looking for new and better rewards.)

This is a completed development action in microcosm. This action and many more like it will make Joe Adams a better manager. If the basic attitude and actions indicated prevail throughout the organization, Joe's company will not worry long about managerial talent—in number or quality. This is development in the pure sense—the manager and the company joining hands in a project for mutual benefit.

Now let us examine one current practice of management development—executive appraisal—and see how some varieties of it violate the very essence of individual growth.

The underlying purpose of executive appraisal is to let the manager and the company know where the manager stands to provide a basis for improving his performance. The focus of the appraisal system is either on the personality of the manager or on the degree to which his performance meets certain subjective or objective criteria. Some appraisal systems pay attention to both these factors.

Further, the process is invariably geared toward plus and minus statements about "last year's work" or "last year's personality." Let us examine the basic assumption: If the employee knows where he stands and is aware the company knows, he will act to improve his performance.

1. What makes us so sure that when a manager "knows where he stands" the mere possession of the knowledge motivates him to improve? Is that all there is to motivation? It is the most important part of motivation?

2. Although, in most cases, he receives the evaluation (after all, if his supervisor prepared it, courtesy requires that he receive it), what makes us think that he will accept it in the spirit it was offered? To those who say you must

"sell" the appraisal, does it follow that the manager will be guided by the evaluation if he is even a little suspicious of its manufacture? Do we sometimes mistake his passive acceptance of it for active agreement with it?

3. Is it within the manager's power to do and be all the things we want? Is he a free agent in the company? Is his supervisor?

4. If we evaluate his personality, can we answer the following questions?

a. What is the ideal managerial personality?

b. Can we describe a management position in terms of the kind of personality the incumbent should possess? (Note—Only with great effort can we list functional duties of management positions and keep the list current.)

c. Let us assume, for sake of argument, that the manager lacks "initiative"—how should be acquire it? Does merely telling him that he lacks it help him, help his supervisor, or help the company?

5. Is the process of helping the individual—and management development implies building on strong points and minimizing the effects of weak ones—creative or judicial?

Here are my reactions to some executive appraisal efforts. A quasi-judicial determination of a manager's capacity can often erect a barrier to development that did not previously exist. If we are to motivate an individual to self-development, we must first gain his confidence so he will ask for and accept our help. I wonder if we do this when we appraise him? Note that appraisal connotes setting a value on his past, present, and future service. Perhaps part of our difficulty in developing managers is the way we go about appraising their strengths and needs.

Platform for improvement

This raises the inevitable question, "Are you saying we should not evaluate the services we pay for?" In answer, I say we now spend a great deal of time both formally and informally speculating on the value of an individual's contribution. I predict no decline in this activity — one of our favorite business pastimes — in the future. I am saying that we tend to judge too often and help too little; the creative process of helping managers improve their contributions should receive equal time.

Because I do not believe there is one best way to develop a manager, it would be idle of me to suggest a detailed all-purpose "program," but here are a few observations that may improve our practices:

1. We should study our company's managerial requirements in light of its position in a particular industry, its future plans, and management turnover. A thorough study, approved by top management, is a good start. However, we should not beg the question: we may already have an adequate supply of managers, both in number and quality, as well as a way of securing all we need in the future without a formal plan.

2. After the requirement study, we should establish short-range, specific objectives that will help managers to develop themselves. (Several possible objectives will be suggested later.) These objectives should point to removing the principal barriers to growth — lack of knowledge of the values placed on one's efforts; improvement of the superior-subordinate relationship, and lack of opportunity to demonstrate one's talents and capacities.

3. We staff assistants should deter-

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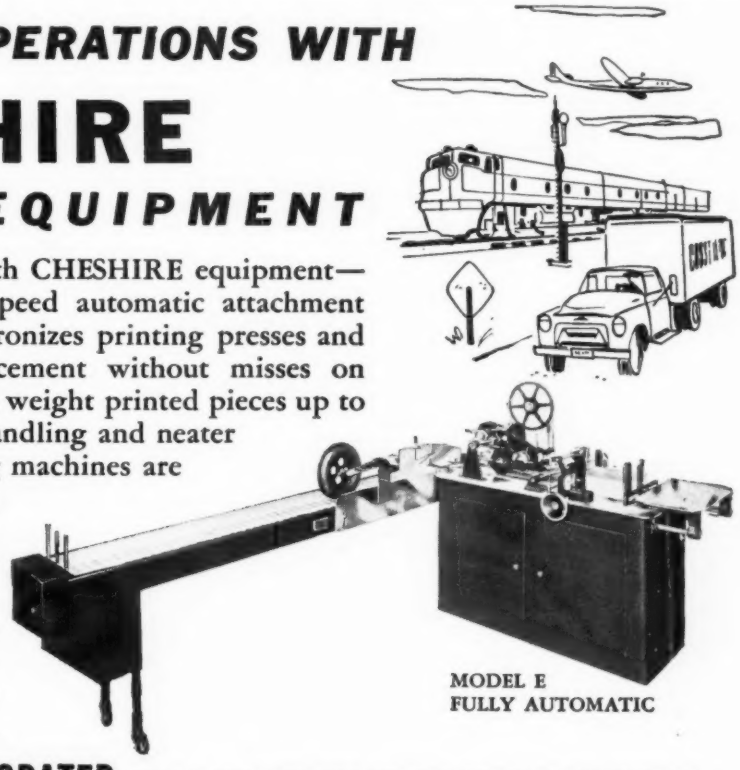

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mine what is within our power. Although we should not defeat our efforts by taking all counsel from our fears, we should know our limitations. This will help us promise no more than we can deliver and concentrate our efforts on things we can do. For example, our staff colleagues in methods and procedures, automation, and accounting can produce finished products—workable procedures, an EDPM system, or an accounting system—but we cannot produce a developed manager. We make tools, not finished products. With our tools, top management's encouragement, and time, the manager can, if he will, develop himself.

4. We should determine to work within our knowledge and add to it when we can. We should be critically selective and reject practices that take us in the wrong direction. Finally, we should develop our own knowledge and understanding. Here are a few examples of the things we know about development — none of them new. These concepts are ample to guide our current activities:

a. Management development starts with the assumption that "there must be a better way." There is no *proof* that a better way exists; our broad objective—"... to develop managers..." is an expression of desire, not a statement of fact.

b. Development involves change — change in the individual and in the group of which he is a part. This change concerns group and individual attitudes about the way company resources are utilized—primarily manpower.

c. The individual primarily controls his own development. The barriers he places in his own path are often the most critical as well as being the hardest to discover. Many of these barriers he is not aware of; others he cannot completely overcome.

d. The second strongest influence on individual growth within the organization is the subordinate-superior relationship.

e. A process of effecting change involves time; as in any educational process, the time involved to achieve the desired change will vary widely among individuals.

f. The qualitative effects of development are released slowly as new skills and knowledge are acquired and brought to bear on operating problems. It is impossible to determine at what point in time these effects will take place.

g. Paradoxically, although the change we want occurs first in the individual, the group of which he is a part, inspired and led by top management, greatly influences the individual's motivation toward change. Top management, by denying opportunity, withholding encouragement, and failing to define areas of responsibility, even in the broadest terms, can effectively reduce the beneficial effects of growth.

h. The process of development is further complicated because we must "unlearn" before we can learn. There are no managers—even new or "undeveloped" ones — without any attitudes or values. In order to achieve benefit from any training or education we must first "soften" the old attitudes, then discard them, and finally replace them with new values. We cannot simply expose managers to new attitudes without first being concerned about the values they have.

Here are a few of the unknowns in management development — the other side of the coin:

a. We do not know what quality of personality or degree of intelligence one needs to manager successfully; we cannot say with any certainty why some people, given excellent opportunities, fail to use their full potential and others, with perhaps less opportunity or capability, succeed readily.

b. We do not as yet know how to measure the results of development, although we are all aware of these changes when and if they take place.

c. We know very little about how organizational structures affect managerial behavior. Although we are adding to our knowledge daily, all we know now is that the work environment has a strong influence on individual development. But we cannot say specifically in what way or how.

d. We know that management is something that can be learned through practice and thought. Yet we cannot be sure when we teach the "principles of management" whether we are teaching correct or incorrect practices. These "principles" in actual practice often lack validity or reliability.

5. We know that the process by which a manager develops is not mechanical. In our planning, we should avoid talking about managers as though they had identical wants, needs, and

capacities. We should resist our natural passion for transforming qualities to quantities just because it is easier to discuss them that way. The fatal flaw of poor management development plans may well be the treatment of the problem in mechanical terms.

6. We should stay away from intricate formal procedural devices in management development activities. Line managers must operate this program. If they feel they need procedures, let them develop them, but we should warn of the danger of procedure worship.

7. Let us not fret because we cannot now statistically evaluate development activities. We engage in many activities, basic research, for example, that we do not measure; do we stop them because we cannot count their results?

8. We can avoid the "second-quarter doldrums" (that point when everybody, including the management development staff, wishes he had never heard of management development) if we realize that full exercise of all capacities is a distant goal for most individuals in a company. We can help each of them reach it by providing specific service of value to them along with some attainable short-term goals. Here are a few possible short-range projects:

Installation of a Performance Analysis System — I would avoid calling it "appraisal" just to get the judicial aroma off the process. The system must end with a job-related plan of development agreed to by the individual and his supervisor and supported by top management. No matter how you organize it, if it does not tell the manager where he stands *and* reassure him that his supervisor will help him improve, the system may not be the helpful device you wanted, but a serious block in your path.

Management Inventory — There are many types, but they all lead to the same point: the ability to anticipate managerial losses in advance. Any type of inventory which will do that graphically highlights approaching manpower problems. Keep it simple!

Individual Development—This is the execution phase occurring after analysis. Development should be predicated on individual capacities, needs, ambitions, and frustrations which, in large measure, we do not as yet fully understand. If all managers accept the fact that their own success is measured largely in terms of their ability to develop subordinates most of your problems will be minor. Top management's attitude and activities are the controlling factors here.

9. The following are some suggestions that may help us gain and maintain top management's interest in the process of development. Top management can be of great assistance if:

a. Its actions indicate it believes management development to be an undelegatable responsibility of each manager in the company—from top to bottom in the organization. The personnel department cannot develop the company managers; it should not be given a responsibility that it cannot discharge. It can help line management, but as a staff department it cannot exercise the authority needed to develop all company managers.

b. Top officers visit their operations more often. The mere presence of a top company official in an operation has a tonic effect.

c. Work standards are kept high. All managers should simply refuse to accept inferior work. At the same time, they must understand its cause.

d. They will use outside consultants sparingly and only in combination with company managers. This will not take away from their managers the challenge of hard problems, the vital ingredient of growth. Let company managers struggle with the problem and if they cannot solve it, let them request assistance.

We have reviewed four critical areas of management development. Many of the questions I have raised, I cannot answer; as a student of development, not an expert, this does not trouble me and I hope it does not disturb you. After all, at this point in time, should not staff men be able, not to find better answers, but to ask better questions?

The literature of management development reflects an intense struggle to solve the problems growing out of the adverse effects of managerial isolation. One aspect of the challenge should please us all: the problem cannot be solved through automation. The very nature of the difficult challenge directs us back to our first unrefuted principle of business life: men make organizations. John Stuart Mill, over a hundred years ago, gave this simple and penetrating counsel:

> "Men are men before they are lawyers or physicians or manufacturers; and if you make them capable and sensible men they will make themselves capable and sensible lawyers and physicians."

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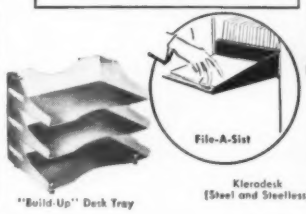

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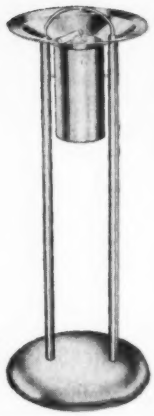

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Union Asbestos & Rubber Co., 332 S. Michigan Ave., Chicago. (C; PA; PW)

United States Air Conditioning Corp., 7900 Tabor Rd., Philadelphia 11. (C; PA; PW)

Victor Electric Products, Inc., 2950 Robertson Rd., Cincinnati 9. (F)

Viking Air Products, 5601 Walworth Ave., Cleveland 2. (F)

Walton Laboratories, Inc., 1186 Grove St., Irvington 11, N. J. (D; H)

Welbilt Corp., 57-18 Flushing Ave., Maspeth 78, N. Y. (WA)

W. W. Welch Co., 1010 Enquirer Bldg., Cincinnati 2. (F)

Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh. (F; PA; PW; WA)

Whirlpool-Seeger Corp., North Shore Administration Bldg., St. Joseph, Mich. (BWA; C; D; PA; RCA; RCW; WA)

Wilster, Inc., 5700 Detroit Ave., Cleveland 2. (F)

Worthington Corp., Harrison, N. J. (C; PA; PW)

York Corp., York, Pa. (BWA; C; PA; PW; RCA; WA)

Floor Coverings

This list includes manufacturers of carpeting, linoleum, tiles of various types, and similar materials. The following codes are used to indicate the types of products made by each manufacturer:

C — Carpeting, materials either not specified or as indicated.
CA — Carpeting, Acrilan.
CC—Carpeting, cotton.
CN—Carpeting, nylon.
CR—Carpeting, rayon.
CW—Carpeting, wool.
L—Linoleum, roll form.
MI—Miscellaneous.
MR—Matting, rubber.
NI—No information on current products available at press time.

T—Tiles, materials either not specified or as indicated.
TA—Tiles, asphalt.
TC—Tiles, cork.
TL—Tiles, linoleum.
TR—Tiles, rubber.
TV—Tiles, solid vinyl.
TVA—Tiles, vinyl asbestos.
TVP—Tiles, vinyl plastic.

Ace Lite Step Co., 1708 S. State St., Chicago 16. (MR; TR)

Ace Rubber Products, Inc., 100 Beech St., Akron, Ohio. (MI — stair treads; MR)

Aldon Rug Mills, Lenni Mills, Pa. (C)

American Biltrite Rubber Co., Inc., Foot of Perrine Ave., Trenton 2, N. J. (C—Rubber; MR; TR; TV)

Armstrong Cork Co., Liberty & Mary Sts., Lancaster, Pa. (C—Deltox; L; MR; TA; TC; TL; TR; TV; TVA)

Artloom Carpet Co., Inc., Allegheny Ave. & Howard St., Philadelphia 33. (C)

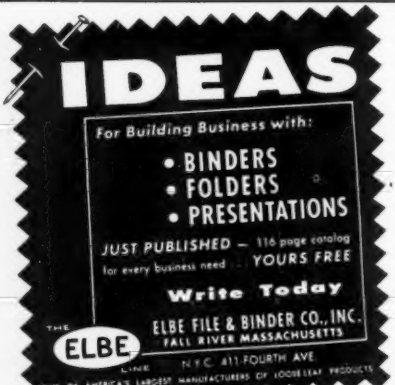
Azrock Products Div. SEE: Uvalde Rock Asphalt Co.

Bigelow-Sanford Carpet Co., Inc., 140 Madison Ave., New York 16. (CC; CN; CR; CW)

Bird & Son, Inc., 47 Wilson St., East Walpole, Mass. (L; MI—enamel surface rugs; TL)

Bonafide Mills, Inc., 295 Fifth Ave., New York. (L; MI—vinyl-plastic rolls; TA; TL; TV; TVA; TVP)

The Philip Carey Mfg. Co., Wayne Ave. at Cooper, Cincinnati. (T)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Carthage Mills, Inc., 124 W. 66 St., Cincinnati. (NI).

Collins & Aikman Corp., 210 Madison Ave., New York. (CN)

Congeleum-Nairn Inc., 195 Belgrove Drive, Kearny, N. J. (C; L; MI—fiber rugs; TA; TC; TL; TR; TV; TVA)

Conneaut Rubber & Plastic Co., Conneaut, Ohio. (T)

Crown Rubber Co., 1615 Croghan St., Fremont, Ohio (CN; CR; MI—runners of vinyl, stair treads; MR)

Danbury Rubber Co., Flooring Div., Danbury, Conn. (NI)

Delaware Floor Products Div., Christiana Ave., Wilmington, Del. (NI)

Duraflex Corp., 411-13 E. 25 St., Baltimore 18. (NI)

Firth Carpet Co., 295 Fifth Ave., New York. (C — blends of wool and other materials; CA; CW)

The Flintkote Co., The Tile-Tex Div., 1232 McKinley Ave., Chicago Heights, Ill. (T—industrial; T—plastic asbestos; TA; TVA)

Fremont Rubber Co., 2400 W. State, Fremont, Ohio. (NI)

Goodall Fabrics, 525 Madison Ave., New York 22. (NI)

B. F. Goodrich Flooring Co., Div. of The B. F. Goodrich Co., Watertown 72, Mass. (MI—rubber stair treads; TA; TR; TV; TVA)

The Goodyear Tire & Rubber Co., Rubber Tile Div., 1144 E. Market St., Akron 16, Ohio. (MI—rolls of rubber and vinyl; TR; TV)

Hachmeister, Inc., 23rd & Forbes, Pittsburgh. (T—plastic, for walls; TA; TV)

Hanley Co., Bradford, Pa. (T)

Hardwick & Magee Co., Inc., Seventh St. & Lehigh Ave., Philadelphia. (C)

Hood Rubber Co. SEE: B. F. Goodrich Flooring Co.

Johns-Manville, 22 E. 40 St., New York 16. (TA; TVA)

Kentile, Inc., 58 Second Ave., Brooklyn 15, N. Y. (TA; TC; TR; TV; TVA)

Charles Lachman Co., Inc., 953 Grant, Phoenixville, Pa. (C)

Laclede-Christy Co., 2002 Hampton Ave., St. Louis. (T)

James Lees & Sons Co., Bridgeport, Pa. (C—wool blends; CN; CR; CW)

The Magee Carpet Co., 295 Fifth Ave., New York 16. (CA; CN; CW)

Mastic Tile Corp. of America, P. O. Box 1151, Newburgh, N. Y. (T—plastic, for walls; TA; TC; TR; TV; TVA)

Mohawk Carpet Mills, Lyon St., Amsterdam, N. Y. (C—Dynel; C—Durlon; CW)

Mundet Cork Corp., Insulation Div., 7203 Tonnelle Ave., North Bergen, N. J. (TC)

National Tile & Mfg. Co., Anderson, Ind. (T—Ceramic)

Nye-Wait Co., Inc., Auburn, N. Y. (CN; CW)

Pabco Floor Covering Div., Fibreboard Paper Products Corp., 475 Brannan St., San Francisco. (L; T—"Mastipave"; T—plastic; TL; TR)

Philadelphia Carpet Co., Allegheny Ave. & C St., Philadelphia. (C)

The R. C. A. Rubber Co., 1833 E. Market St., Akron 5, Ohio. (NI)

Robbins Floor Products, Inc., Tuscumbia, Ala. (TC; TR; TV)

Roxbury Carpet Co., Saxonville, Mass. (NI)

Rubber Products, Inc., Tampa & Washington Sts., Tampa 2, Fla. (NI)

Sandura Co., Inc., Sansom & 17 St., Philadelphia. (TV)

Sloane-Delaware Floor Products, Div. of Congoleum-Nairn, P.O. Box 401, Trenton, N. J. (L; MI—fiber rugs; TC; TL; TR; TV; TVA)

Alexander Smith, Inc., 295 Fifth Ave., New York 16. (C)

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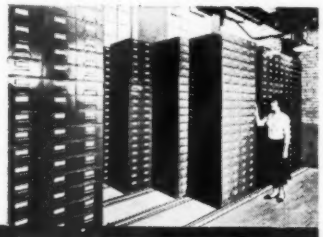

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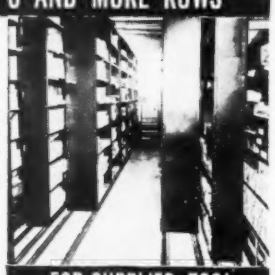

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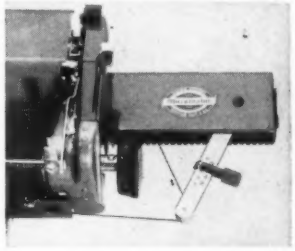

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Tile-Tex Div. SEE: The Flintkote Co.

Uvalde Rock Asphalt Co., Azrock Floor Products Div., Frost Bank Bldg., San Antonio, Tex. (T—industrial; TA; TV; TVA)

M. J. Whittall Associates, Worcester, Mass. (CW)

Wright Mfg. Co., Div. of Mastic Tile Corp. of America, 5200 Post Oak Rd., Houston 5, Tex. (TR; TV)

Overhead Lighting Fixtures

The following list includes the principal manufacturers of overhead fixtures for use in offices. The codes used to indicate the types of products offered are as follows:

FL—Fluorescent luminaires, troffers, etc.

IF—Incandescent light fixtures.

LCE—"Luminous ceilings"—egg-crate and similar types.

LCT—"Luminous ceilings"—translucent types.

MI—Miscellaneous.

NI—No information on current products available at press time.

SS—Suspension systems supporting light fixtures incorporated in suspended ceilings.

Accesso Systems, Inc., 4615 Eighth Ave., N. W., Seattle 7. (SS)

Benjamin Electric Mfg. Co., Des Plaines, Ill. (FL; IF; LCE; LCT)

The Celotex Corp., 120 S. La Salle St., Chicago 3. (LCT)

Corning Glass Works, Corning, N.Y. (MI—Glassware for lighting fixtures)

Cupples Products Corp., 2650 S. Hanley Rd., St. Louis 17. (SS)

Curtis Lighting, Inc., 6135 W. 65 St., Chicago 38. (FL; IF; LCT)

Day Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis 7. (FL; IF)

The Electron Corp., 5100 S. Santa Fe, Littleton, Colo. (FL)

Gruber Lighting, 125 S. First St., Brooklyn 11, N. Y. (FL; LCT)

Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3. (FL; IF; LCE; LCT)

Holdenline Co., 2301 Scranton Rd., Cleveland 13, Ohio. (FL; IF)

Holophane Co., Inc., 342 Madison Ave., New York 17. (FL; IF; LCT)

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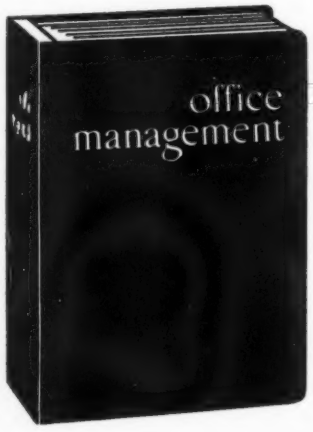

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PF — Partitions for attachment to furniture.

PS — Partitions of the free-standing type.

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Acme Steel Partition Co., Inc., 513 Porter Ave., Brooklyn, N. Y. (PS)

Add-A-Unit Partition Co., 946 W. North Ave., Chicago 22. (NI)

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Ainsworth-Precision Castings Co., Mult-A-Frame Div., 1471 E. Atwater St., Detroit 7. (PS)

All Metal Partition Co., Inc., 194-204 Du Pont St., Brooklyn 22, N. Y. (PS)

American Bamboo Corp., 171-06 Jamaica Ave., Jamaica, N. Y. (FW)

American Sanitary Partition Corp., Flex-Wall Div., 37-03 21 St., Long Island City, N. Y. (NI)

Arnot-Jamestown Div. SEE: Aetna Steel Products Corp.

Art Metal Construction Co., Jones & Gifford Aves., Jamestown, N. Y. (PF; PS)

Art Steel Co., Inc., 170 W. 233 St., New York 63. (PF; PS)

Bemis Bro. Bag Co., Transwall Coated Products, 601 Fourth St. S., Minneapolis 15. (FW)

E. J. Boyle Div., Aetna Steel Products Corp., 14 Charlton St., New York. (PS)

Browne-Morse Co., Muskegon, Mich. (PF; PS)

The Brunswick-Balke-Collender Co., The Horn Div., 623 S. Wabash Ave., Chicago 5. (FW)

Irwin Casper, Inc., 401 Broadway, New York 13. (PS)

Ceco Steel Products Corp., 5601 W. 26 St., Chicago 50. (NI)

The Celotex Corp., 120 S. La Salle St., Chicago 3. (PS)

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Driwood Corp., P. O. Box 447, Monroe, Ga. (NI)

John T. Fairhurst & Co., Inc., 45 W. 45 St., New York 36. (FW)

Flex-Wall Div. SEE: American Sanitary Partition Corp.

GR Products, Inc., 2417 Eastern Ave., S. E., Grand Rapids, Mich. (PS)

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General Steel Products Corp., Flushing 55, N. Y. (PS)

The Globe-Wernicke Co., 5025 Carthage Ave., Norwood, Cincinnati 12, Ohio. (PF; PS)

The E. F. Hauserman Co., 6800 Grant Ave., Cleveland 5. (PS)

Robert Haws Co., 15722 Telegraph Rd., Detroit 39. (FW)

Hemisphere Steel Products Corp., 263 Kent Ave., Brooklyn 11, N. Y. (PS)

Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren St., Indianapolis 7. (FW)

Holley Associates, Route 38 at Church Rd., Merchantville, N. J. (PS)

The Horn Div. SEE: Brunswick-Balke-Collender Co.

Hough Mfg. Corp., 1023 S. Jackson St., Janesville, Wis. (FW)

Johns-Manville, 22 E. 40 St., New York 16. (PS)

Korda Industries, 20 W. 46 St., New York 19. (PF; PS)

Kraus Co., 332 Plover St., Stevens Point, Wis. (NI)

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Milwaukee Stamping Co., Ferrometal Partitions Div., 2530 W. National Ave., Milwaukee 4. (PS)

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Virginia Metal Products, Inc., Orange, Va. (PS)

Ward Industries. SEE: Prosperity Co.

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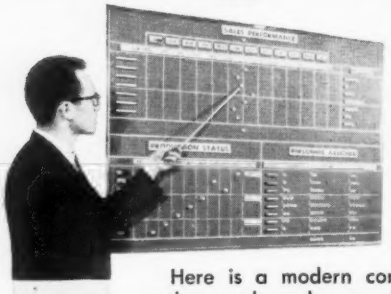

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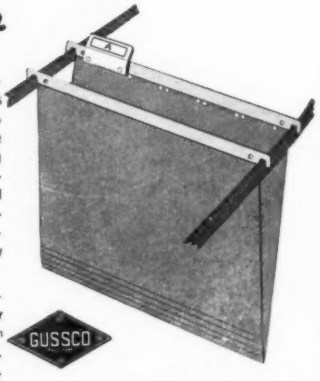

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The year ahead

editorial THROUGHOUT the articles that appear in this edition of the *Office Management* Yearbook, one central theme appears: the office is in another period of major transition. With the new emphasis on costs that is becoming so important in so many companies today, the office takes on a new importance in every company. For the paperwork processing lines cannot directly earn money for the company, cannot increase its sales or devise new and profitable products for it to manufacture. But if the office cannot increase the company's gross income, it can drive down the company's total costs. And, in a time of falling sales, the ability to lower costs intelligently can become one of the most important management qualities.

So present circumstances, besides changing the atmosphere in which the office works, and the problems which the office faces, also give it a new and serious responsibility: acting as the governor on the company's activities, the control center which insures that whatever cost cutting measures the company takes are taken in accordance with an overall plan, that economies specified in one area will not cripple the work of another. It is the office which holds the facts and the figures by which the company can determine where savings can be effected, where it would be reckless to try to cut costs. It is the way the office handles those facts and figures, the accuracy and perception with which it evaluates them that will determine whether companies trying to lower their costs do so intelligently, and make themselves stronger and more efficient in the process or whether they weaken themselves and mortgage their future through penny-wise, pound-foolish policies.

To a degree of course, this is the historic role of the office; the difficulty lies in the fact that we have been in a boom period for so long that tight control of costs has become a secondary consideration to many managements. This is not to say that management has countenanced wild extravagance in its work processes; it has not. But it has all too often permitted the continuance of procedures that could be eliminated; the manufacture of products which were marginal; the pursuit of activities which were not essential. It is these areas which the intelligent management intent on lowering its costs will inspect critically. And it is the office which must bring in the evidence by which management will judge the relative importance of each of the company's activities.

This revival of the analytical functions of the office represents a challenge and an opportunity to those responsible for administering the office. It means they must continue to do their own job with scrupulous care, but it means that it is imperative they do their work against a background knowledge of their company and all its activities, that they must have the abilities of specialists, and the qualities and breadth of viewpoint of generalists.

It is a demanding role. But it is a role that must be played in the months ahead. The skill and intelligence with which the assignment is carried out can mean all the difference between a tightly organized, dynamic company prepared to weather a recession without difficulty, and to move forward fast with a business upturn, and a company badly handicapped under poor business conditions, slow to react when business improves again.

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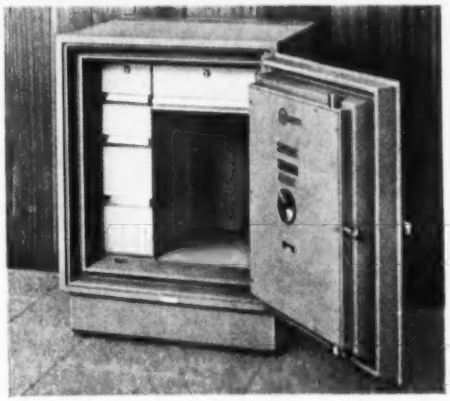

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